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# SUSTAINABILITY

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# VALUE


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Thai Oil Public Company Limited  
Sustainability Report 2017



MEMBER OF

**Dow Jones**  
**Sustainability Indices**

In Collaboration with RobecoSAM 

Thai Oil PCL is listed as a member of Dow Jones Sustainability Indices 2017 in Oil & Gas Refining & Marketing industry of the emerging market with the international recognition on sustainability performance in economic, social and environmental aspects for five consecutive years. Thai Oil has also maintained the Energy Industry Group Leader for four consecutive years.



**ROBECOSAM**  
**Sustainability Award**  
**Gold Class 2018**

RobecoSAM announced in Sustainability Yearbook 2018 that Thai Oil PCL achieved Gold Class level, the highest ranking of Oil & Gas Refining & Marketing companies worldwide for five consecutive years.



# About This Report

**Thai Oil Public Company Limited has published the annual corporate sustainability report for the seventh consecutive year as part of its commitment to stakeholders on disclosing the company's material sustainability performance. The corporate sustainability report is addressing economic, social and environmental performances and covers information during the period from 1<sup>st</sup> January 2017 to 31<sup>st</sup> December 2017. This report is a mean to present Thailoil's performances to stakeholders transparently.**

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## Reporting Approach

The 2017 corporate sustainability report has been prepared in accordance with the reporting guidelines of the Global Reporting Initiative (Standards) at the level of "Core" option, and additional indicators for companies in the Oil and Gas Sector Disclosure (OGSD). Furthermore, the report partly adheres to the Integrated Reporting <IR> Framework and presents Thailoil's progress in implementing the Ten Principles of the United Nations Global Compact (UNGC).

In addition, Thailoil understands the importance of United Nations' Sustainable Development Goals (SDGs), and has conducted preliminary evaluation of Thailoil's performance in relation to SDGs, which are adapted for further development and strategy formulation, and will be presented in this report.

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## Reporting Scope (102-45, 102-46)

The scope of this report considered the relevant information of business, data comprehensiveness and impacts on performance of Thailoil's main businesses; namely, oil refinery, petrochemical, lube base oil, power generation, transportation and others. For occupational health, safety and environmental performance, the scope only covered Thai Oil Public Company Limited (TOP), Thai Lube Base Public Company Limited (TLB), Thai Paraxylene Company Limited (TPX), Thailoil Energy Services Company Limited (TES), Thailoil Power Company Limited (TP), LABIX Company Limited, TOPSSP Company Limited, that covered approximately 97% of total revenues.

**For additional information on performance of companies beyond the scope of this report, please refer to 2017 Annual Report or <https://investor-th.thaioilgroup.com/ar.html>**

- To download an electronic form of this Corporate Sustainability Report, please visit [https://www.thaioilgroup.com/home/media\\_ebook.aspx?id=273](https://www.thaioilgroup.com/home/media_ebook.aspx?id=273)
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# Message from the CEO and President



*In 2017, Thairoil and Subsidiaries had exceeded our business targets. This is thanks to the stable crude oil price, increasing domestic demands as the economy slowly recovers and the efficiency of the company's refinery operations. The Company's net profit is at 24,856 million Baht and the share price is at its highest in the last fifty years.*

*This success would not be possible without the cooperation of employees and the management at all levels. They had worked hard to increase productivity. The average rate is more than five percent higher than the target productivity rate. They also succeeded in maintaining the lost time injury frequency rate (LTIFR) of employee at zero. These efforts resulted in plant availability performance, leading to the production capacity of refined oil products about 308,000 barrels per day*

Mr. Atikom Terbsiri  
Chief Executive Officer and President  
Thairoil Public Limited Company

Amidst the changes and global challenges, Thairoil had assessed emerging risks which might pose major impacts to company operations in 3-5 years and had prepared mitigation measures for two important emerging risks, as follows:

## Challenge from digitization,

such as data management. Thairoil had developed a digital transformation roadmap to enhance employee capabilities to apply digital technology in production and procurement processes.

## Risk from disruptive technology,

such as the emergence of Electric Vehicles (EV) which may replace conventional vehicles using oil and gas as fuel. Thairoil assessed and reviewed its market re-segmentation to focus more on the aviation and marine transport industry. The Company plans to reduce gasoline production in accordance to decreasing demand and to increase diesel production. We will also focus our expertise in aviation fuel and specialty products.

To enable sustainable business growth, address changing technologies and to maintain its position as a sustainability leader, Thairoil has launched the Clean Fuel Project (CFP) to increase the production of its new Crude Distillation Unit and to apply cutting-edge technology to convert bunker oil into aviation fuel and diesel. Expected to complete in early 2022, the Project would also increase the capacity and utilization of heavy crude oil and expand the refinery's production capacity to 400,000 barrels per day. In the meantime (2017-2019), Thairoil has allocated investment in improving supply chain and logistics infrastructure. This will increase productivity and support the expansion goal. The infrastructure includes the expansion of our seaport by 2019 to reduce congestion and to support bigger ships, building additional crude oil storage tanks to store a larger reserve of crude oil which is increasingly valuable, and relocating the office building within the refinery

to improve working condition and to fully utilize the refinery space for future expansion.

The CFP is also consistent with the Sustainability Strategy, focusing on operational excellence to create balanced growth in terms of economic, social, and environmental aspects in the long run. The Project will facilitate the production of fuels that meet EURO 5 standards, reducing the sulfur content in fuels, thus contributing to a better living environment. The Project will also improve safety standards throughout the refinery process to reduce impacts on employees, surrounding communities, and the environment while increasing productivity and reducing greenhouse gas emissions. The latter is an important issue in the refinery industry currently.

With the commitment for sustainable business, Thairoil and Subsidiaries have integrated sustainability management for every Thairoil business operation. In 2017, the Company developed its five-year sustainability strategies (2018-2022) based on the following principles:

## Value Protection Strategy

Focusing on compliance with business practices, laws and regulations, and ethics. This is done through the development of transparent work and systematic decision-making processes and the promotion of an anti-corruption culture with an emphasis on monitoring and preventive mechanism to reduce risk from project operations. Examples of activities under this strategy include the development of Thairoil Investment Management (TIM) and Thairoil Affiliate Management (TAM) guidelines.

## Value Enhancement Strategy

Focusing on enhancing business values by improving business efficiency to address customer needs. An example of activities under this strategy includes the value chain optimization. In future, the CFP will increase Thairoil's production capacity and boost international trade.

## Sustainable Value Creation Strategy

Focusing on enhancing the long-term capabilities of the Company through the use of new technologies and innovations. This will address the demand for new innovations in the solvent industry and the development of robots to increase efficiency in pipe transport maintenance. New technologies and innovations will reduce production cost and increase employee capabilities in the long run.

Thairoil's Human Capital Index (HCI) comprises of assessment on employee readiness, career advancement, and employee engagement. In 2017, the HCI achieved a score of 91. This is our highest score to date. The achievement demonstrated Thairoil's commitment to human development ranging from career planning, training and providing career advancement. In addition, Thairoil fosters collaboration between employees and managers at every level to drive the organization towards greater sustainability. For its efforts, Thairoil has been selected as a member of Dow Jones Sustainability Indices (DJSI) for five consecutive years and has received the highest assessment score within the Energy Industry Group for four consecutive years. This recognition brings enormous pride to Thairoil and helps to boost our sustainability spirit.

**Lastly, on behalf of Thairoil and Subsidiaries, I would like to thank all staff and stakeholders' support that had enabled Thairoil and Subsidiaries to operate and grow in a sustainable manner. I strongly believe that transparent management system, strong organizational culture, and the commitment throughout the Company to run the business with consideration for our environment, economy and society will drive Thairoil and Subsidiaries towards the goal of becoming a leading, fully integrated refinery and petrochemical company in Asia Pacific.**

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# Group Overview

## THAI OIL PUBLIC COMPANY LIMITED

*Thai Oil, the biggest refinery plant in Thailand, has been operating for more than 56 years. Thai Oil operates refinery business with highly efficient and state-of-the-art production processes in order to produce and supply finished petroleum products to mainly the domestic market. The business of Thai Oil extends its value chain from the petroleum refinery to both upstream and downstream.*

## Vision

We strive to be a leading fully integrated refining and petrochemical company in Asia Pacific

## Mission

To be in top quartile on performance and return on investment

To create a high-performance organization that promotes teamwork, innovation and trust for sustainability

To emphasize good corporate governance and commit to corporate social responsibility

## Corporate Values



- Professionalism
- Ownership and Commitment
- Social Responsibility
- Integrity
- Teamwork and Collaboration
- Initiative
- Vision Focus
- Excellence Striving

Headquarter	Listed Date in the Stock Exchange of Thailand	Registered Capital	Percentage of shares owned by PTT PLC.
Bangkok, Thailand	October 9, 2004	20,400,278,730 baht	49.10 %

Refinery Production in 2017	Location of operations
Approximately <b>308,000</b> BBL per day <b>112%</b> of nameplate capacity at 275,000 BBL per day <b>25%</b> of Thailand's refinery capacity	Thailand, Vietnam and Singapore



## Sale Revenues

337,388  
million Baht

## Net Profit

24,856  
million Baht

## Number of employees

1,447  
total

Male 1,059  
Female 388

## Employee Wage and Benefits

3,468  
million Baht

## Social Contribution

30  
million Baht

## Energy Investment

26  
million Baht

## VALUE CHAIN OF THAI OIL

*Thai Oil Public Company Limited operates refinery business with the use of highly efficient and state - of - the - art production processes in order to produce and supply finished petroleum products to mainly the domestic market. The business of Thai Oil extends its value chain from the petroleum refinery to both upstream and downstream.*

### 01 TRANSPORTATION

This business supports marketing, efficiency improvement and potential opportunities including international marine transportation of petroleum and petrochemical products. Our fleet comprises of 10 vessels, transporting crude oil and petrochemical products, ranging from large crude carriers, medium-sized vessels to small-sized Tankers. Thai Oil also invests in petroleum product pipe- line business.

### 02 OIL REFINERY

The oil refinery is our core business which has been operated for more than 56 years.

### 03 POWER AND STEAM GENERATION

Co-generation power plant ensures the power stability of Thai Oil operations. The power plant utilizes natural gas as the resource for the production. The produced electricity and steam is mainly used internally.

### 04 PETROCHEMICAL & LUBE BASE

This business utilizes by-products from our petroleum refinery and turn them into commercialized products such as aromatics, lube, bitumen, Treated Distillate Aromatic Extract (TDAE), and Linear Alkyl Benzene(LAB), adding values to our production line.

### 05 SOLVENT

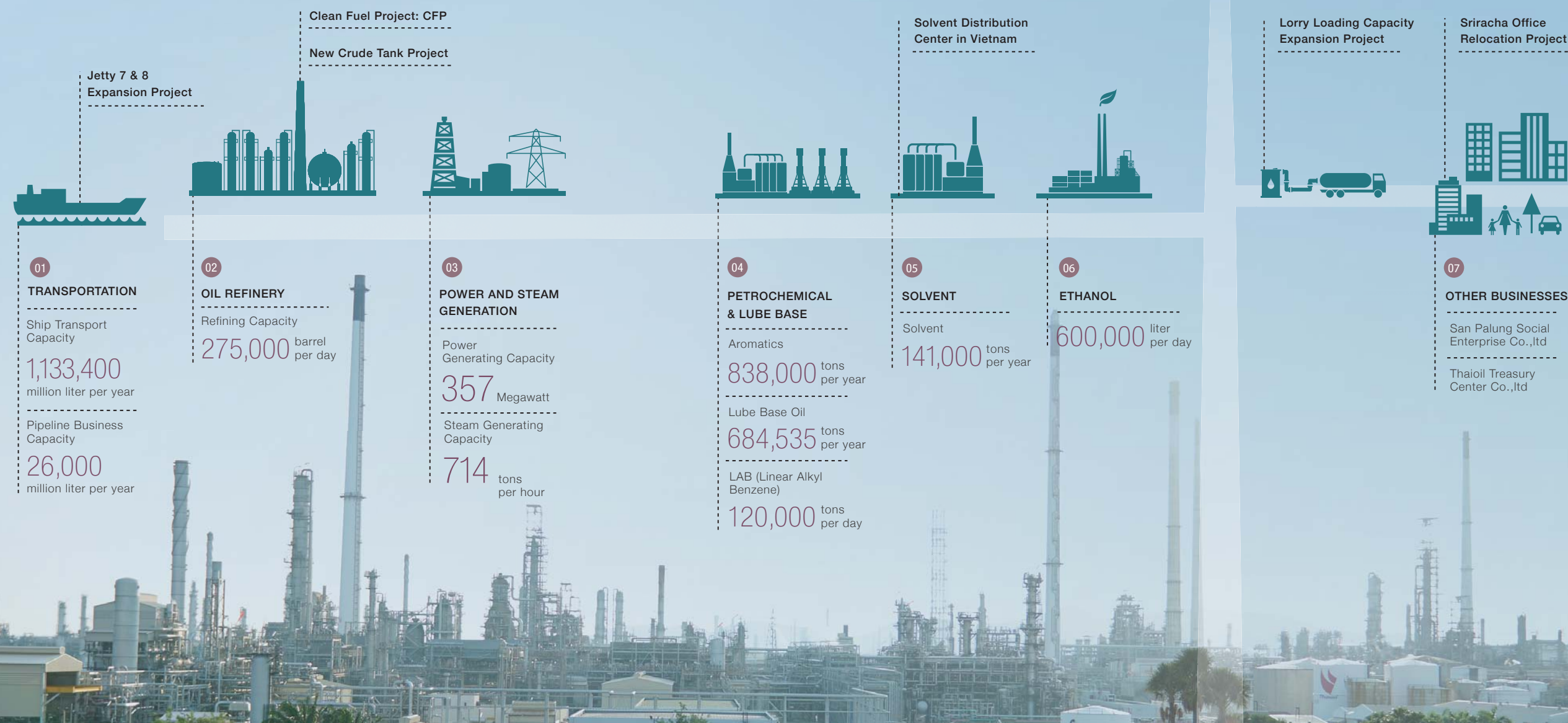
This business produces solvent from Thai Oil petroleum refinery's by-products through collaboration with a subsidiary, and distributes within Thailand and to Vietnam.

### 06 ETHANOL

This business encourages the production of ethanol and renewable energy through joint venture with two ethanol plants.

### 07 OTHER BUSINESSES

Supporting businesses such as human resource management, treasury management, digital and information management, and social enterprise.



## Our Strategy

The sustainability goals of Thailoil and Subsidiaries are to firstly, become a trusted organization for stakeholders and secondly, be able to operate sustainably in Thailand and across the Asia Pacific region. The Company is committed to balancing economic, social, and environmental considerations, by taking into account past, present, and future stakeholder expectations throughout the value chain. Thailoil has, therefore, integrated sustainability management as part of our normal business operation, including our subsidiaries. The ultimate goal is to create business growth while balancing the quality of life of nearby communities and society and the optimal use of natural resources.

Challenges facing today's business arise from a myriad of factors. These factors include consumer demand for environmentally friendly fuel and products, rapid changes in technologies and new age of information technology, and demographical changes due to the establishment of the ASEAN Economic Community (AEC).

To achieve its sustainability goals, Thailoil has developed three levels of Sustainability Strategies which are

### Value Protection - Value Enhancement - Sustainable Value Creation

These Sustainability Strategies support the Company's

#### "TOP-GET-BEST-PLUS"

business strategies to enhance higher performance, to increase returns on investment and to balance growth in all economic, social and environmental aspects.

## VISION

*"A leading fully integrated refining and petrochemical company in Asia Pacific"*



Value Protection

Strategy to protect business value by focusing on compliance with business practices, laws and regulations, ethics, as well as risk and crisis management – this strategy will help ensure that every project that Thailoil operates is transparent throughout the process and does not have negative impacts on the society and the environment.



### Operational Excellence to Thailoil Profit Improvement

This strategy focuses on continuous production, increase reliability, and improve energy efficiency. It also emphasizes flexibility in the production and distribution process to address customer demand, remain competitive through cost management, and the management of organizational risks (covering investment, operation, and business continuity management) to become the Most Reliable Company.



Value Enhancement

Strategy to enhance business value by improving efficiency, addressing customer needs and adapting business to increase competitive advantage and save cost – for example, improvement in energy efficiency to reduce resource consumption, to decrease GHG emissions, to save cost and to reduce waste and increase revenues by converting by-products into value-added products.



### Growth Execution

This strategy focuses on enhancing capabilities and potentials for long term competitiveness and growth in two areas: core business and diversified business. This will add value to the products, reduce the fluctuation of profits, diversify investment risks, and expand growth in the ASEAN region.



Sustainable Value Creation

Strategy to create sustainable value by enhancing long term capability of the Company through new technologies and innovations, talent attraction and retention, and inclusiveness of stakeholder expectation for long term mutual growth.



### Business Excellence & Sustainability

This strategy focuses on building capacity to achieve strategic goals through the management of an investment portfolio that diversifies risks and increases the ratio of new businesses that address industry trend and future energy consumption. It also includes research and development to prepare for domestic and international growth, as well as for the growth of new businesses while emphasizing the balance of the economy, the society, and the environment.



### Professional Ultimate Enterprise

This strategy focuses on the preparation to become a High Performance Organization to address the changing businesses. The strategy emphasizes two approaches: firstly, the People 4.0 project to attract talent and enhance employee capabilities. This will drive the organization toward success. Secondly, digitization efforts to make Thailoil and Subsidiaries a leader in the implementation of digital technology to increase operational efficiency.







# Materiality Assessment and Stakeholder Relationship

## Materiality Assessment on the Sustainability Issues of Thaioil and Subsidiaries, in Accordance with GRI STANDARD

The materiality assessment on sustainability issues is conducted annually for responding to the interests of internal and external stakeholders Thaioil and Subsidiarie. This assessment process guides the Company in prioritizing issues for disclosure based on the following criteria: 1) actual and potential economic, environmental, and social impacts of business and operations, and 2) stakeholders’ concerns and influence on their decision-making.








### Materiality Assessment Process of Thaioil and Subsidiarie



#### Step 1: Identification

For the 2017 materiality assessment, Thaioil and Subsidiaries conducted the SWOT Analysis framework as a basis to determine material sustainability issues. The framework consists of analyzing strengths, weaknesses, opportunities, and threats with regards to each issue. This assessment is conducted by reviewing the results of the previous year together with the analysis referring to the Global Reporting Initiative (GRI) Standards, the Dow Jones Sustainability Indices (DJSI), Sustainability Development Goals (SDGs), feedback from the previous year's Sustainability Report, internal and external stakeholders’ concerns and issues of interest, and other global megatrends in sustainability practices. Consequently, the 13 material issues identified through this process are shown below:

Material Issues	Business Challenges and Opportunities	Potential Impacts	Preparation	Associated strategic priorities
Governance Dimension				
 Fight against corruption	<ul style="list-style-type: none"><li>Changes in stakeholders' expectations and trust</li><li>Due to upcoming mega-projects such as the Clean Fuel Project (CFP), the transparency practices are expected.</li></ul>	<ul style="list-style-type: none"><li>Corruption and bribery are considered as acts of crime, and can lead to adverse impacts on the business including but not limited to reputational damage, loss of employee loyalty and pride, broken business relations, and disruption to operations.</li></ul>	<ul style="list-style-type: none"><li>Include the Anti-Corruption Policy in the TOP Way of Conduct handbook to ensure conformance and comprehensive management for Thaioil and Subsidiaries</li><li>Operate as a "clear, fair professional" to ensure full transparency and fair practices in all operations, and drive employees' practices to ensure complete compliance with the Anti-Corruption Policy</li><li>Integrate the Governance Code of Conduct and Anti-Corruption Policy in the Supplier Code of Conduct, and provide capacity-building and knowledge-building support for Suppliers at the Supplier Summit</li></ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
Economic Dimension				
 Value Chain Management	<ul style="list-style-type: none"><li>Potential increasing of business value through collaborative management of ESG risks with suppliers, including the opportunity to achieve more win-win situations</li><li>Additional opportunities on collaboration with suppliers in preparations for the CFP project to ensure business continuity and maximum operational efficiency</li><li>To address consumer behaviour changes</li></ul>	<ul style="list-style-type: none"><li>Lack of a transparent and effective approach to value chain management can lead to loss of trust in business capability, loss of supplier supporting which then leads to increased costs, and loss of customer satisfaction which then leads to revenue and profit loss.</li></ul>	<ul style="list-style-type: none"><li>Develop sustainable practices in economic, social, and environmental performance throughout the value chain, with due consideration towards risks, impacts, development plans, and overall contribution in capacity building for all stakeholders associated with future projects – i.e. Clean Fuel Project, Jetty 7/8 Project, EPIC for 7 Storage Tanks for New Lorry Loading Expansion Project, new office building and other facility changes.</li><li>Develop procurement employees' capabilities and skills, and inspire them the values of ethical, transparent, and professional conduct (Clear Fair Professional Program)</li><li>Enhance efficiency of procurement processes through digitization – i.e. e-Procurement.</li></ul>	<b>Strategy 2:</b> Value Enhancement: Enhanced Competitive Advantage and Long-Term Growth
 Innovation Management	<ul style="list-style-type: none"><li>Opportunity to advance technological capability and business strategy to ensure competitive advantage from the rapid generating of new alternative non-fossil energy options, i.e. upcoming industries such as electric cars and hydrogen fuels</li></ul>	<ul style="list-style-type: none"><li>Upcoming products that replace traditional energy sources – of which are currently Thaioil's primary products – may lead to profit loss – i.e. decreased consumption of gasoline will naturally lead to decreased revenues for Thaioil.</li></ul>	<ul style="list-style-type: none"><li>Execute the Clean Fuel Project (CFP) plan, which proportion of diesel and aviation fuel production capacity will be increased with achieved Euro 5 Emission Standards. On the other side, process innovation initiatives such as the use of high-efficiency technology will be applied to increase energy efficiency and minimize environmental impacts.</li><li>Innovate to enhance operational efficiency and increase customer satisfaction with regards to safety in transport and logistics – e.g. In-Pipe Inspection Robot, Motor Operating Valve, and Terminal Automation System.</li><li>Support and promote creativity at the workplace through initiatives, such as the biannual Wisdom &amp; Innovation Award, to provide employees with the space to turn their hands-on experience and ideas into commercialized and further enhance the company's efficiency and competitive advantage.</li></ul>	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
Environmental Dimension				
 Environmental Management System	<ul style="list-style-type: none"><li>Stringent environmental standards and regulations as a result of reducing in resource availability and international agreements and goals</li></ul>	<ul style="list-style-type: none"><li>Operations may create impacts to the surrounding environment, ecosystem, biodiversity levels, and natural resource availability, which may then lead to risks and impacts in compliance with environmental laws and regulations, and other social and economic issues.</li></ul>	<ul style="list-style-type: none"><li>Conduct the Integrated Management System (IMS) for comprehensively encapsulate the environmental dimension (the present IMS complies with global quality, safety, health, and environment management e.g. ISO 14001).</li><li>Consistently monitor, track, and assess compliance with regulations and new environmental regulations and standards through developing a regulations categorization system and establishing a team responsible for conducting comprehensive, accurate, and standardized assessments and ensuring legal compliance.</li></ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
 Operational Eco-Efficiency	<ul style="list-style-type: none"><li>Adequately responding to stakeholders' expectations – i.e. local communities' expects that the company will not generate environmental impacts that will damage their livelihoods</li><li>Managing and controlling environmental impacts of new and/or expanding projects – i.e. the CFP Project and the Jetty Project</li><li>Creating competitiveness of margin management through efficiency improvement of production processes</li></ul>	<ul style="list-style-type: none"><li>Thaioil's operations may create environmental impacts and impacts to stakeholders' sentiments, including but not limited to community acceptance of impacts on health, environment, ecosystem, and natural resource availability.</li><li>Enhance competitiveness and business's income</li></ul>	<ul style="list-style-type: none"><li>Apply efficient fuel combustion technologies.</li><li>Implement the Emission Improvement Project (EIP).</li><li>Consider investing in advanced refining technologies to achieve a cleaner production process.</li><li>Designate a higher proportion of fuel gas usage as opposed to fuel oil usage to control SO<sub>x</sub> and NO<sub>x</sub> emission rates.</li><li>Implement the 3Rs in operational waste management to lessen environmental impact and comply with the Zero Waste to Landfill Policy.</li><li>Design measures to prevention of oil and chemical spills, develop mitigation measures in the case of a spill, and initiate training programs to develop employee capability in handling emergencies and supporting stakeholders during emergencies.</li></ul>	<b>Strategy 2:</b> Value Enhancement: Enhanced Competitive Advantage and Long-Term Growth
 Climate change	<ul style="list-style-type: none"><li>Thailand has signed onto international climate agreements to decrease 20-25% of its 2015 greenhouse gas emission rates by 2030. This means that Thaioil may face new GHG reduction regulations and standards to be enforced over the next 3-5 years.</li><li>Expectation on alternative energy options</li></ul>	<ul style="list-style-type: none"><li>In case of the regulatory changes, Thaioil may face increased costs of operations and introduced costs in implementing GHG emissions reduction and carbon offset initiatives.</li></ul>	<ul style="list-style-type: none"><li>Invest in the construction of new Crude Distillation Units with improvement of production efficiency, and plan to shutdown of old Crude Distillation Units that have operated for longer than 50 years</li><li>Improve energy efficiency in accordance with the Solomon Associates Energy Intensity Index (EII).</li></ul>	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business

Material Issues	Business Challenges and Opportunities	Potential Impacts	Preparation	Associated strategic priorities
Environmental Dimension				
 <b>Water-Related Risks</b>	<ul style="list-style-type: none"> <li>Risks in production processes from water scarcity, and pressure on the integrated water management to optimize expectations of all stakeholders, cover water providers and users</li> <li>Significant increase in water demand as a result of expansion of large facilities such as the upcoming CFP Project</li> <li>Changes in regulations and changes in household and industrial water consumption fees</li> </ul>	<ul style="list-style-type: none"> <li>Water availability may not meet the demand of Thaioil's operations and stakeholders, and operations may be disrupted during occasions of water scarcity – which may become more prevalent due to climate change.</li> </ul>	<ul style="list-style-type: none"> <li>Establish Water Crisis Management measures that include an Emergency Response Procedure for water scarcity.</li> <li>Conduct periodic water risk assessments (i.e. every 1-3 years and 5-10 years) to be done by both internal functions and external parties.</li> <li>Improve water efficiency to prevent potential impacts from water scarcity due to climate change.</li> <li>Decrease freshwater use from natural sources through seawater desalination.</li> <li>Integrate the 3Rs in water management through production processes – i.e. increase cooling water circulation through water reuse, and replacing old water pipes with new ones to decrease leaking and seeping of raw water.</li> </ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
 <b>Biodiversity</b>	<ul style="list-style-type: none"> <li>Although existing operations does not locate in any World Heritage areas or IUCN Category I-IV protected areas, biodiversity has been aware for future new investment project in other locations.</li> </ul>	<ul style="list-style-type: none"> <li>In case of new investment in or nearby biodiversity rich areas, it may pose the impact to local communities who may not take longer access to the benefits from the biodiversity for their livelihoods as they have before.</li> </ul>	Ensure that all operations do not pose the impact on communities who take benefits on biodiversity by: <ul style="list-style-type: none"> <li>Regularly monitor the state and condition of the flora and fauna around the refinery's area, enrich the natural surroundings, and conduct marine biodiversity survey.</li> <li>Monitor treated water quality once every 7 days by internal functions and once every month by independent parties which the chemical oxygen demand (COD) levels is monitored every 24 hours.</li> <li>Employ certified independent parties to assess environmental conditions of the surrounding areas. (It was found that operations did not pose significantly impact on groundwater quality or plankton diversity.)</li> <li>Integrate ESG criteria in the risk assessment process during preliminary study phase of new investment projects, including issues such as impact on biodiversity, conservation land for endangered species, and vulnerable species.</li> </ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
Social Dimension				
 <b>Occupational Health and Safety (OHS)</b>	<ul style="list-style-type: none"> <li>Thaioil and Subsidiaries aim to be an accident-free organization for employees, contractors, and stakeholders. For achieving goals, the effective management approach must be designed to properly manage risks in the expansion of operations and the new mega-projects.</li> </ul>	<ul style="list-style-type: none"> <li>If there is no effective management of occupational health and safety in the workplace, there may be impacts not just towards safety, but also to the willingness to work of employees, contractors, and other stakeholders. There may also be other adverse impacts such as reputational damages and increased costs of operations in the case of failure to comply with safety regulations.</li> </ul>	<ul style="list-style-type: none"> <li>Develop a safety handbook for construction projects that includes lifesaving rules, and translate the handbook to different languages to accommodate foreign contractors who may be involved in future projects.</li> <li>Conduct preparations for the establishment of the CFP Support Center, including safety measures for transport, logistics, and traffic congestion in the area.</li> <li>Foster a safety culture and improve occupational health and safety management program together with contractors which the "Safe White Green" program – a project that develops the management approach concerning Safety (Safe), Security (White), and Environment (Green) was initiated.</li> </ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
 <b>Process Safety and Integrity</b>	<ul style="list-style-type: none"> <li>As production facilities and equipment have long lifetimes, management procedures are vital to ensuring the safety of production equipment and processes since damaged equipment and process may lead to severe incident.</li> </ul>	<ul style="list-style-type: none"> <li>Unplanned shutdowns or severe incidents, such as explosions, fire hazards, or spills, may pose the impacts on employees, contractors, suppliers, and surrounding communities.</li> </ul>	<ul style="list-style-type: none"> <li>Emphasize on preventing severe incident impacting on life, asset and environment through the Process Safety Management (PSM) System which starting with the prevention of near miss to the prevention of severe incidents such as explosions, fire hazards, or spills, are designed to assist companies in achieving zero unplanned shutdowns.</li> </ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management
 <b>Human Capital</b>	<ul style="list-style-type: none"> <li>External driver to speed up human development such as the government's Thailand 4.0 goals</li> <li>Highly competitive labour markets</li> <li>High retirement rates</li> <li>Preparations for upcoming CFP Project and shutdowns of old Crude Distillation Units</li> </ul>	<ul style="list-style-type: none"> <li>Need adaptation to changes on new and variety skill requirement</li> <li>Lacking of leaderships affect effectiveness of business operation and growth, and maintaining leadership position in fully integrated refining and petrochemical company in Asia Pacific</li> </ul>	<ul style="list-style-type: none"> <li>Prioritize in talent retention and development through the GREAT and DANCE+ initiatives to supports business plan to transform and digitize production processes in accordance with the Thailand 4.0 vision, and also aligns with the Company's vision and mission.</li> <li>Recruit employees who perform potential and value of ethical business conduct through recruiting strategies such as the 4B initiative and other digital recruitment initiatives.</li> <li>Inspire passion in the workplace and encourage interpersonal connections within the workforce to inspire employee loyalty. Some examples of initiatives developed to accomplish this goal include employee-well-being initiatives and the Gen-to-Gen Knowledge Transfer Project.</li> </ul>	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
 <b>Corporate Citizenship &amp; Philanthropy</b>	<ul style="list-style-type: none"> <li>Changes in stakeholders' expectations on the Company</li> <li>Create positive social development projects to enhance business competitiveness</li> <li>Changes in characteristics of surrounding communities (i.e. influx of migrant labour as a result of CFP and other projects)</li> </ul>	<ul style="list-style-type: none"> <li>In order to achieve and maintain a social license to operate, Thaioil and Subsidiaries may have to improve the current management approach to better handle reputational risks, and enhance efficiency in responding to stakeholders' demands. This can be achieved through collaborating with local communities and public agencies.</li> </ul>	<ul style="list-style-type: none"> <li>Develop and implement social development projects, focusing on fostering lasting relationship with local communities and building collaborations</li> <li>Develop stakeholders relationship building processes, policies, and management approaches with clear identification of responsibilities and accountability</li> <li>Build understanding in creating shared value (CSV) principles for onsite employees, and integrate CSV principles into of business practices such as initiating CSV projects, integrating CSV principles in investment decision-making, and engaging with stakeholders</li> <li>Develop PTTSE (PTT Group Social Enterprise) operations alongside the community to ensure inclusive and sustainable development</li> </ul>	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
 <b>Human Rights</b>	<ul style="list-style-type: none"> <li>Increasingly stringent human rights standards and regulations</li> <li>Thaioil's and Subsidiaries' Human Rights Policy and commitment</li> <li>Human rights risk management approach</li> </ul>	<ul style="list-style-type: none"> <li>Human rights risks may create adverse impacts such as reputational damage, profit loss through consumer boycotting, and time in court.</li> </ul>	<ul style="list-style-type: none"> <li>Demonstrate commitment towards respecting and protecting the human rights of employees, suppliers, and other stakeholders through respecting and complying with international human rights standards and other relevant standards</li> <li>Commit to implementing the human rights due diligence process throughout the value chain, and indicate human rights risks issues.</li> </ul>	<b>Strategy 1:</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management

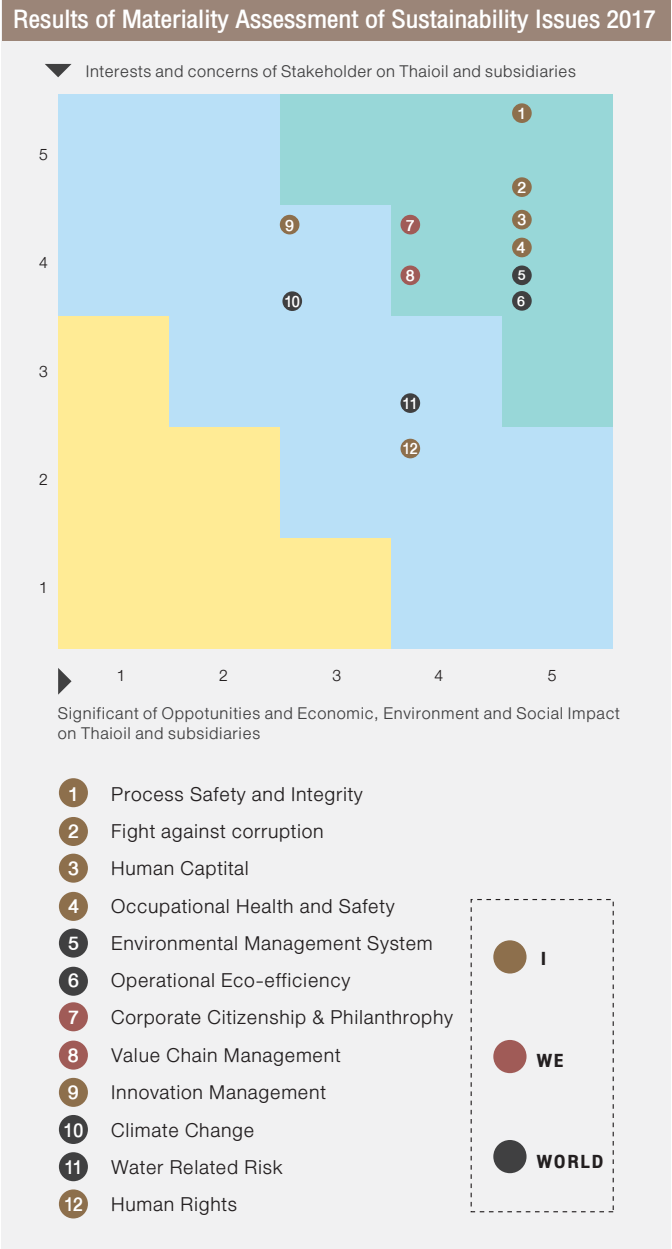


### Step 2: Prioritization

2017 material sustainability aspects of Thaoil and Subsidiaries derived by prioritizing 13 issues identified in Step 1 through the evaluation of two dimensions: 1) potential impacts (defined and assessed without mitigation measures) and significant opportunities towards the Company, and 2) interests and concerns of stakeholders. The issues were then scored from 1-5 based on the two dimensions. The results revealed that eight issues were ranked at the high levels, four issues were ranked as medium, and one issue was ranked as low. This report covers the material issues classified at high and medium levels.

### Step 3: Validation

Upon identification and prioritization of material issues, validation was then led by the Sustainability Development function. The results were presented to a senior-level management meeting, chaired by the CEO for endorsement and approval based on internal and external impact of the business. Additionally, independent assures are involved in verifying the materiality assessment process, stakeholder engagement, data processing, and accuracy in reporting against safety and environment performance indicators in order to assure that its data is accurate and comprehensive. Assurance Statement is presented on pages 76-77.



### Scoping of issues to be disclosed

Chapter	Material Issue	Corresponding Material GRI Topics (102-47)	Impact Boundary (103-1)		
			Within Thaoil and Sub-sidiaries	External Stake-holders	Related External Stakeholders
I					
Corporate Governance	• Fight against corruption	GRI 205 Anti-corruption	✓	✓	Shareholders, creditors, and financial institutions Suppliers and partners Related government agencies

Chapter	Material Issue	Corresponding Material GRI Topics (102-47)	Impact Boundary (103-1)		
			Within Thaoil and Sub-sidiaries	External Stake-holders	Related External Stakeholders
Innovation Management	• Innovation Management	-	✓	✓	Shareholders Partners
Our Employees	• Human Capital • Human Rights	GRI 401 Employment GRI 404 Training and Education GRI 402 Labor/Management Relations GRI 405 Diversity and Equal Opportunity GRI 412 Human Rights Assessment	✓		
Occupational Health and Safety	• Occupational Health and Safety • Process Safety and Integrity	GRI 403 Occupational Health and Safety OG 13 Asset Integrity and Process Safety OGR Emergency Preparedness	✓	✓	Suppliers contractors
WE					
Corporate Social Responsibility	• Corporate Citizenship & Philanthropy	GRI 203 Indirect Economic Impacts GRI 413 Local Communities	✓	✓	Communities Society
Value Chain Management	• Value Chain Management	GRI 308 Supplier Environmental Assessment GRI 414 Supplier Social Assessment GRI 418 Customer Privacy	✓	✓	Suppliers Contractors Customers
WORLD					
Environmental Management	• Environmental Management System • Operational Eco-efficiency	GRI 307 Environmental Compliance GRI 305 Emissions GRI 306 Effluents and Waste	✓	✓	Communities, society Related government agencies
Energy Efficiency and Climate Change	• Climate Change • Water Related Risks	GRI 302 Energy GRI 305 Emissions GRI 201 Economic Performance GRI 303 Water	✓	✓	Shareholders Communities and society Related government agencies Customers

Remarks

\* In 2017, there was no restatement of previous year performance <sup>(102-48)</sup>

\*\* In 2017, there were no changes in the reporting scope <sup>(102-49)</sup>

Stakeholder Inclusiveness <sup>(102-42)</sup>

*Thaioil categorized all stakeholders into six main groups, and has established specific functions responsible for each group to ensure engagement. These functions' responsibilities are to engage and communicate with the stakeholders as well as receive feedbacks and recommendations which are taken into consideration in business decision-making and operations.*

## Stakeholder Engagement 2016-2017

Stakeholder Group (102-40)	Importance of Engagement	Example of Engagement Method (102-43)	Examples of Stakeholder's Expectations (102-44)	Response to Stakeholder's Expectations	Impact on Strategy
Shareholders, Creditors, Financial Institutions	Shareholders, creditors, and financial institutions are the source of financial capital. Thus, their expectations are vital in assuring business growth and investment opportunities for the Thaioil and Subsidiaries who must assure transparency and accessible channels for communications in order to address any concerns these stakeholders may have.	<ul style="list-style-type: none"> <li>Annual General Meeting (AGM)</li> <li>Annual report</li> <li>Quarterly corporate performance announcement</li> <li>Company site visit</li> <li>Financial analysis meeting</li> <li>Investment exhibition</li> <li>Grievance mechanism (Whistle Blowing)</li> <li>Forum</li> <li>Frequent phone calls</li> </ul>	<ul style="list-style-type: none"> <li>Sustainable and increasing returns on investment</li> <li>Transparency and accountability</li> <li>Potential business growth</li> </ul>	See Corporate Governance and Innovation Management for additional information.	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
Customers	Customer insights, demands, and behaviors are needed to take into account in order to design and deliver appropriate products and services, enhance engagement and secure revenue increase.	<ul style="list-style-type: none"> <li>Newsletters</li> <li>Annual customer engagement survey</li> <li>Company site visit</li> <li>Customer visit</li> <li>Grievance mechanisms (Whistle blowing)</li> </ul>	<ul style="list-style-type: none"> <li>Product quality and service quality before and after sales</li> <li>Prompt product delivery and access to tracking product status</li> <li>Environmental-friendly products</li> </ul>	See Value Chain Management for additional information.	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
Suppliers and Contractors	Suppliers and contractors support Thaioil and Subsidiaries to deliver value and gain customer satisfaction.	<ul style="list-style-type: none"> <li>Annual meeting with suppliers and contractors</li> <li>Frequent communication through online channels and phone calls</li> <li>Site visits to enrich supplier relationship management</li> <li>Grievance mechanisms (Whistle Blowing)</li> </ul>	<ul style="list-style-type: none"> <li>Fair and transparent procurement processes</li> <li>Attractive return appropriate for their performance</li> <li>Added value and sustainable collaborations</li> <li>Accurate and timely payments</li> </ul>	See Value Chain Management, Corporate Governance, and Occupational Health and Safety for additional information.	<b>Strategy 2:</b> Value Enhancement : Enhanced Competitive Advantage and Long-Term Growth
Employees	Employees are the key to delivering value to customers, and their insights, wants, and challenges are vital to designing a strategy that fits with the mission and vision of Thaioil and Subsidiaries.	<ul style="list-style-type: none"> <li>Quarterly CEO meeting with employees</li> <li>Monthly company journal</li> <li>Annual employee engagement survey</li> <li>Frequent internal communication through online channels</li> <li>Mid-year and year-end employee performance appraisal</li> <li>Exchange of ideas between supervisors and their employees</li> <li>Annual knowledge sharing activities through representatives from Employees' Committee</li> <li>Grievance mechanisms (Whistle blowing)</li> </ul>	<ul style="list-style-type: none"> <li>Compensation</li> <li>Benefits and welfare</li> <li>Career security</li> <li>Opportunities for career advancement</li> <li>Occupational health and safety</li> <li>Training and development opportunities</li> <li>Happiness at the workplace</li> <li>Equality</li> </ul>	See Our Employees and Occupational Health and Safety for additional information.	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
Community and Society	Local communities surrounding the refinery are like our neighbor for many passing years. Thaioil and Subsidiaries collaborate with local communities in order to create long term shared value and build community engagement and trust to the organization.	<ul style="list-style-type: none"> <li>Frequent onsite community visits and community relation activities</li> <li>Monthly meetings with community leaders</li> <li>Social and communities activities at Thaioil Group Community Health and Learning Center throughout the year</li> </ul>	<ul style="list-style-type: none"> <li>Reduction of business's impacts on communities' livelihoods, such as air quality as a result of business expansion</li> <li>Sponsorship of community activities</li> <li>Development and troubleshooting for society and communities</li> <li>Preventative measures for severe accidents that may impact community members</li> </ul>	See Our Society and Communities, Occupational Health and Safety, Environmental Management, and Climate Change and Energy Efficiency for additional information.	<b>Strategy 3:</b> Sustainable Value Creation: Creativity to create sustainable outcomes for the business
Government and related government agencies	The government and its agencies are responsible for license permission for all operations, and control compliance. To ensure compliance and business continuity, Thaioil and Subsidiaries must understand demands and perspectives on ESG issues.	<ul style="list-style-type: none"> <li>Quarterly reports shared to government agencies</li> <li>Participation in state-led activities and programs relevant to the business and operations of Thaioil and Subsidiaries</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with rules, laws, and regulations</li> <li>Anti-corruption</li> <li>Impacts on local communities – i.e. air emissions, wastewater discharge, traffic congestion, etc.</li> </ul>	See Corporate Governance and Environmental Management for additional information.	<b>Strategy 1</b> Value Protection: Operating according to Thaioil's business principles, regulations, code of conduct, and risk management



# I

## Strengthening Value

Thaioil and Subsidiaries focus on creating excellent values in all areas to strengthen the business for continuous success and support the security of energy supply in Thailand.



Corporate  
Governance



Innovation



Human  
Capital



Occupational  
Health & Safety



# Corporate Governance

## Sustainability Goal

Nurtured good governance and anti-corruption culture throughout the organization and strictly adhere to the law, regulations, and standards for transparency and equitable treatment of all stakeholders

### Current Practice

Clear-Fair-Professional (CFP) Principle is applied in business operations

Mandatory annual reporting for employees to Thail's Conflict of Interest Disclosure Report System

Received re-certification membership in the Collective Action Coalition against Corruption (CAC) and continuous participation in CAC's activities

### Strategies to achieve sustainability goal within 3-5 years

Integrated Corporate Governance Policy, Anti-corruption Policy, and Whistle-blowing Procedure in TOP Way of Conduct as standardized practices for all companies within Thail and Subsidiaries

## Commitment

Thail is strongly committed to conducting business with integrity, fairness, transparency, and equitable treatment for all stakeholders, while adhering to social and environmental responsibilities and promoting the development of good corporate governance. This helps Thail achieve one of its mission, "to emphasize good Corporate Governance and commit to Corporate Social Responsibility." It also lays the foundation to forge confidence among shareholders, investors, and all stakeholders, enhance competitiveness, and promote sustainable growth.

### Received the NACC Integrity Honorary Award

from the Office of the National Anti-Corruption Commission in the 7<sup>th</sup> NACC Integrity Awards Ceremony

### No dispute or complaint

for non-compliance and corruption-induced practices

Achieved a score of

97

out of 100 on corporate governance survey of Thai listed companies in 2017 (CGR 2017) assessed by the Thai Institute of Directors Association (IOD). The Company received the highest score among the assessed companies for two consecutive years and awarded an "EXCELLENT" level score (score of 90-100) for nine consecutive years.

## Sustainable Development Goals (SDGs)



## Challenges and Opportunities

Thail adheres to corporate governance principles based on transparency, fairness and equality for all stakeholders. Thail strives to review and update its policies and guidelines regularly to ensure that they remain up-to-date with applicable laws, regulations, and international standards.

Apart from its strong corporate governance, Thail launches the anti-corruption policy as guidelines for business operations to all companies within Thail and Subsidiaries. Thail also commits to countering corruption in conjunction with external agencies, including both the governmental and private sector, to exchange knowledge and experience, as well as to induce stronger effort to fight against corruption.

Corruption can occur at any time and any place. It hinders national socio-economic development and has different levels of severity. Thail makes consistent effort to find new approaches to manage and prevent corruption risks.

Thail uses good corporate governance and anti-corruption principles as a foundation for setting up a systematic and efficient management structures. Board-committees have been set up to ensure that the day-to-day business operations comply with rules, regulations, and any legal requirements. This is the key factor to protect the rights of all stakeholders to gain their confidence and trust, as well as for the utmost benefits for the society and the nation as a whole.

## Management Approach and Performance

### Corporate Governance Structure

Appointed by the shareholders' votes at the Annual General Meeting of Shareholders (AGM), the Board of Directors (the Board) must be qualified, capable, accountable, generally acceptable, and must not have prohibited characteristics specified by the Public Limited Company Act.

The Nomination and Remuneration Committee considered and nominated qualified candidate using Board's diversity criteria, which consists of diversity in genders, skills, professions, and specialization, namely industrial, financial, business, management, marketing, strategic management, law, and security, etc. To ensure that Directors can devote their time and effort to performing duties, Thail established a policy that the Directors can take to no more than five listed companies.

The Board must have at least one-third Independent Directors of all Directors and the number must not be less than three. The composition of the Board must have a proportional number of Independent Directors for checks and balances of the Board and the management. Independent Directors must have all the qualifications required by the Capital Market Supervisory Board and must be independent of major shareholders and Thail's management.

The Board has appointed four Board-Committees, namely the Audit Committee, the Nomination and Remuneration Committee, the Corporate Governance Committee, and the Risk Management Committee, to efficiently and effectively scrutinize and supervise Thail's operations, as assigned by the Board.

Any issues regarding corporate governance, social responsibility, and sustainability management will be handled and considered by the Corporate Governance Committee. Its performance is reported to the Board on regular basis. However, any important and urgent issues shall be directly and immediately report to the Board.

In 2017, the Board comprised of 14 Directors, including one Executive Director and 13 Non-Executive Directors, seven of whom are Independent Directors. There are four female Directors on the Board. Thail disclosed the roles and responsibilities of each Board-Committee as along with the profile of every Director on the Thail's website at [https://www.thaioilgroup.com/home/board\\_directors.aspx?lang=en](https://www.thaioilgroup.com/home/board_directors.aspx?lang=en)



## The Fight against Corruption

Thaioil is committed to basing business on fairness, integrity, and transparency, thus creating confidence and trust among all stakeholders while contributing to sustainable growth. The Board established an explicit Anti-Corruption Policy: *“The Board, executives, and employees must not corrupt or accept corruption of all forms in any circumstances, covering the business of Thaioil in every country and in every relevant agency. Thaioil defines guidelines, operating measures, and roles and duties of responsible persons, as well as regular monitoring and reviewing the implementation of the Anti-Corruption Policy, in compliance with changes in businesses, rules, regulations, and relevant laws.”* Apart from the policy, Thaioil provided definitions, roles and responsibilities, and implementation of the policy. The Anti-Corruption Policy is annually reviewed in line with prevailing circumstances and in response to changing risks. The policy was reported to the Corporate Governance Committee and the Board respectively for approval.

In addition to the Anti-Corruption Policy, Thaioil has Code of conduct relating to anti-corruption matters; such as giving or acceptance of presents, assets, or other benefits, conflict of interest, etc. The Anti-Corruption Policy and the Code of Conduct can be found in the Company's website. To set the standard among Thaioil and Subsidiaries, Thaioil included the corporate governance policy, anti-corruption policy, and whistle-blowing measures in the TOP Way of Conduct for

all subsidiaries to acknowledge and comply

Moreover, Thaioil established the Supplier Code of Conduct to promote common understanding Thaioil and its business partners, based on sustainability. Thaioil regularly communicated its anti-corruption policy and practices as well as setting guidelines for business partners' development through variety of channels, for instance, PTT Group CG Day. This has enabled the business partners to comply with Thaioil's policy and has contributed to improving business partners themselves.



To reinforce its commitment to fight against corruption, Thaioil launched the “No Gift Policy” and made announcements to customers, business partners, and other related parties to refrain from offering gifts and hospitality to Thaioil and Subsidiaries' management and employees. Such practices are to avoid and prevent actions leading to violations of the Anti-Corruption Policy in order to operate business with fairness and equality, thus to achieve business sustainability.

In the attempt to fight against corruption, Thaioil participated and maintained its



membership in various collaborative networks, for instance, the United Nations Global Compact (UNGC), received the re-certification from the Collective Action Coalition against Corruption (CAC), and



the Partnership against Corruption for Thailand (PACT Networking). These networks provide opportunities to exchange knowledge, experiences, and best practices on anti-corruption with other organizations at the domestic and international levels.



## Conflict of Interest Disclosure Electronic System

Thaioil developed the Conflict of Interest Disclosure Electronic System to monitor any conflict of interest that may arise within Thaioil and Subsidiaries. All employees are required to report any conflict of interest on the system annually. In 2017, 87 percent of all employees submitted the conflict of interest disclosure forms, of which two potential cases were identified. After thoroughly review and investigation of these two cases, no conflict of interest is found.

## Whistle-Blowing Measures and Whistle-Blowing Protection Mechanism

Thaioil regularly reviews its whistle-blowing processes and procedures covering whistle-blowers protection mechanism and monitoring process, in accordance to the law, rules and regulations, and Thaioil's Code of Conduct. This ensures the effectiveness of Thaioil's whistle-blowing processes and procedures, in line with guidelines issued by the Stock Exchange of Thailand (SET).

Any dubious acts for unlawful gains, including embezzlement, corrupt practices, and fraud shall be forwarded to the Corporate Internal Systems Audit Department for investigation. The department maintains its independence by reporting directly to the Audit Committee to ensure that all reports of wrongdoing are treated impartially.

In 2017, there was no issue raised concerning an illegal act, no fine or non-monetary liability, and no corruption case. Thaioil has planned to raise employees' awareness and make the whistle-blowing procedures more widely known within the organization.

## PTT Group CG Day 2017

Thaioil, in collaboration with PTT Group, organized PTT Group CG Day 2017, with goals of reiterating its commitment to conduct business based on internationally accepted corporate governance standards, fostering a transparency in corporate culture, and reinforcing its anti-corruption efforts throughout the PTT Group. This contributes to cultivate confidence and trust among all stakeholders.

This year, PTT Group CG Day 2017 was organized under the theme, “CG in DNA: Together We Can,” with the objectives to raise awareness on business conduct by adhering to integrity and transparency for employees within the PTT Group. In this event, there was a special lecture on the fight against anti-corruption by Professor Vicha Mahakun, President of the Anti-Corruption Foundation. Afterward, top executives from six companies within PTT Group jointly held a forum under the topic of “Decoding CG, Fostering Good Deeds towards Sustainable Culture” to pave the way for business conduct under good corporate governance principles and practices.



*“Procurement practices must be based on good governance principles. We need to emphasize our Supplier Code of Conduct to suppliers so that they can use it as a dictionary to help them understand our expectation on ESG practices and commitment on anti-corruption. We also need to adhere firmly to our CFP: Clear-Fair-Profession principles which will be the foundation toward sustainable growth”*

Mr. Atikom Terbsiri,

President and Chief Executive Officer, Thai Oil Public Company Limited  
Quote from CEO Forum under the topic, “Decoding CG, Fostering Good Deeds towards Sustainable Culture”

# Innovation Management

## Sustainability Goals

Targeting innovation as one of the corporate key performance indicators, with an emphasis in commercialization both internally and externally.

## Current Progress

Achieved 5 commercial-ized projects in 2017	Operational efficiency improve-ment projects comprise Opening-Closing ValveProject (K-1 Device), Terminal Automation Manage-ment System (TAM), and In-pipe Inspection robot	Project that avoids equip-ment degradation is MOV display protection, and project that improve equipment reliability is C-CAS
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## Strategies to achieve sustainability goal within 3-5 years

Focus on continuous development of innovation and commercialization, including identifying new business opportunities from emerging technologies

## Commitment and Goal

Thaioil and Subsidiaries commit to continuously innovate for the benefits of increased efficiency in production, identification of new business opportunities, as well as creating a long term competitiveness. These enable sustainable business growth amidst a highly competitive market. Thus innovation development and commercialization of innovation are focused for creating tangible benefits and added value to the business. This succession is driven by integration of creativity, research and development, technology implementation, and commercial profit creation.

Furthermore, innovation for responding to customers' needs, such as a sustainable product development, is also initiated. This is especially the case for users' safety and environmentally friendly product innovation, which enhance business opportunities and cope with the changing economic, social and environmental trends.

Innovation management goal of the Company emphasizes on positive impacts on business operations and creating opportunities for new business development in the future. A myriad of changes, from technology, business environment, customers' needs, the importance of environment, rapid response to changes, and strategies of business competitors are taken to be considered. This will create business competitiveness both in the short- and long- term, addressing profit generation, saving, mitigation of any risks that may affect the business, and enhancing the reputation on human excellence of the Company

2

Patents registered in 2017

5

Projects Commercialized innovation in 2017

466

Million Baht

Benefits generated from commercialized innovation in 2017

The first licensing on intellectual property

A patent on MOV Display Protection project for production and distribution of valve cover

Sustainable Development Goals (SDGs)



## Challenges and Opportunities

Rapid technological and environmental changes in business operations, customers' likelihood to focus on the quality of products chosen, innovation and development various forms of alternative energy technology, as to replace oil-based energy, and innovation of new business models. These are challenges that must be appropriately managed by the Company.

Examples of changes that have already occurred are such as electric cars, power generation by solar cells, packaging made from natural materials, utilization of computer systems and robots in industrial production. These changes challenge companies that continue the use of traditional production technology. Therefore, Thaioil and Subsidiaries gives an emphasis on the development of innovation and technology that will shape the Company's future. There are a multitude of innovation plans, from product innovation, process innovation, business model innovation, to ensure readiness for competitive markets and any other changes that may affect business operations both in the short- and the long- term. Examples comprise of investment in other alternative energy business, particularly electrical power, as it is considered an important energy source for future electric cars. Furthermore, Thaioil is committed to produce quality products with the highest efficiency and are competitive, as well as increasing its investment into other businesses to reinforce corporate stability in the long run.

## Management Approach and Performance

### Innovation Management

Thaioil has developed an innovation processed called, 'Idea to Commercialization Process (I2C),' to conduct innovation development which research and devel-opment are an important key. Emphasis has been given to collaboration between internal functions and collaboration with external parties, in the form of open innovation. Innovation and Sustainability Management Function is responsible in upholding, reinforcing and developing the innovative culture to employees at all levels.

In 2015, which was considered the starting point of development and creation of intellectual property, the number of intellectual properties (IP) in the form of

"patents" registered with Department of Intellectual Property, Ministry of Commerce, has established to serve as a corporate's Key Performance Indicator (KPI). This enables tangible development of intellectual properties, and helped Thaioil to achieve 14 intellectual property registered as of 2017. The target was achieved due to consistent and determined collaboration among the Company's employees. In 2017, Thaioil established new target that focuses on commercialization benefits generated from intellectual properties, i.e. widely implementation for work benefits, application of R&D results to solve problems, to increase the productivity, or to innovate and develop existing products for greater quality and value, as corporate KPI.

### Innovation Culture

Ensure awareness on the importance of innovation and instill innovation culture

Collaborate with internal functions and external parties to create innovation

Create innovation for technological development and commercialization

### Thaioil Group Wisdom and Innovation Award 2017

Organized activities for employees to be part of the drive for innovation through contests. In 2017, Thaioil and Subsidiaries organized the Thaioil Group Wisdom and Innovation Award 2017. Winners will be granted awards and their idea will be selected to be processed further develop-ment towards commercialization.





Furthermore, Thailoil and Subsidiaries also collaborate with external parties to elevate the overall capacity for R&D and innovation management. The goal is to identify business development opportunities created by science and technology for increasing the effectiveness of equipment in the plant, saving cost, providing knowledge to employees, and creating added value to business in the future. Examples consist of a joint project between Thailoil and VISTEC Institute for collaborative efforts to develop high-level science and technology, to create a foundation for further business advance; to sign Memorandum of Understanding in R&D between Thailoil and external private company for development of innovation and novel engineering inspection technology in Thailand's energy industry, reinforcing Thailand's industrial inspection standard to be on par with international standards.

#### Process for innovation commercialization

- 01 Set objectives for innovation project
- 02 Initial study and collaboration in the form of Open Innovation
- 03 Research design and development
- 04 prototype development
- 05 Improvement
- 06 Implementation, evaluation and commercialization

#### Innovation performance

In 2017, Thailoil and Subsidiaries commercialized innovation development projects from Thailoil employees' creativity according to corporate KPI. The key projects are as follows:



##### Opening-Closing Valve Project (K-1 Device)

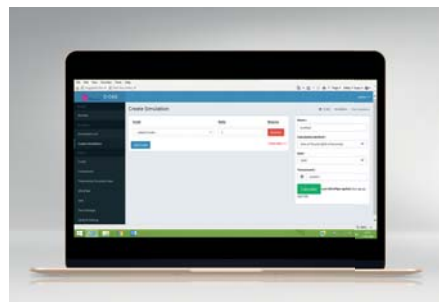
A tool for opening-closing valve was originated from the production team who require equipment to open and close the valves by replacing the installation of a set with driving motors. This project was the first project of the Company that generated commercialized benefits and planned to implement in all Area Production Units (APU).



##### In-Pipe Inspection Robot Project

Robots for in-pipe surface inspection are able to work on 8-32 inches pipes, to move vertically, horizontally, around turns and splits. Both photographs and motion pictures in high resolution can be record. Cracking or damages that are smaller than 1 mm can be inspected. This project is the second innovation that was officially commercialized.

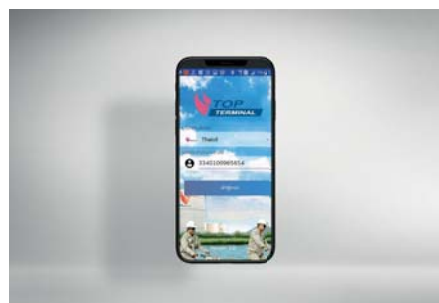
Commercial benefits : cost saving at 200,000 Baht annually



##### C-CAS (Crude Corrosion Assessment Software)

C-CAS is one of the project developed to facilitate impact assessment of unconventional crude oil refinery, with corrosive components that are higher than the equipment's designed value in the production process. This enables safe refining from crude oil with high corrosives, increase the efficiency of equipment maintenance, and generate tangible benefits from the refining.

Commercial benefits : cost saving at 5 million Baht annually



##### Terminal Automation Management: TAM

TAM is considered an innovation process that increase the efficiency of finished oil product distribution terminal, which provide great satisfaction and experience for customers. There are functions for purchase order tracking from anywhere around the world, for precise oil product- loading order control, tracking of transportation vehicles. Ability to connect with various modules allows TAM can reduce the product loading time from 2 hours to 45 minutes

Commercial benefits : generating values at 460 million Baht annually from the development of TAM and the new installed 5 grantries.



##### Motorized Operating Valve (MOV) Protection Project

Innovation originated from the creativity of employees in engineering who need to extend the lifetime of MOV in order to save the maintenance cost. This project is the first intellectual property that Thailoil granted commercialized licensing to other business, which produces it as products for trading. It is an example of an innovation created to unlock the problems at workplace

Commercial benefits : generating values at 100,000 Baht from licensing and cost saving from maintenance at 1 million Baht annually

Apart from developing innovation, Thailoil has also been invited to showcase different works at exhibitions. Not only does the exhibitions show the capacity, the knowledge and the expertise of Thailoil employees, it also provides the opportunity to exchange knowledge and innovation information with energy experts in the field and others.

##### Innovation exhibition at PTT We Can in collaboration with PTT Group

From 15 August to 18 September 2017, Thailoil presented and demonstrated 'In-pipe Inspection Robot' and 'Opening-Closing Valve Project (K-1 Device)' at PTT We can Booth, 1<sup>st</sup> and 2<sup>nd</sup> Floor hall, Building 1, PTT Headquarter.



Tube Inspection Tool. It was a stage showcasing notable innovation from PTT Group, allowing PTT Group employees, students and university students to visit 1<sup>st</sup> Floor, Building 1 and 2, PTT Building, PTT Headquarter.



##### Annual Energy Symposium 2017

On 6 September 2017, Thailoil presented 'In-Pipe Inspection Robot' and 'K-1 Device' to the annual Energy Symposium 2017 on "Energy 4.0... Opportunities of Thai industries" at Vipawadee Ballroom, Centara Grand at Central Plaza, Ladphrao, Bangkok.

##### "PTT Group SPIRIT Day for Sustainable Growth 2017"

On 6-10 November 2017, Thailoil presented and demonstrated 3 innovations; In-Pipe Inspection Robot, K-1 Device, and Reformer

##### Annual National Engineering Day 2017

King Vajiralongkorn kindly sent Gen. Bandit Malaiarison as the royal envoy to preside over the opening of Annual national Engineering Day and the 35<sup>th</sup> Conference of the ASEAN Federation of Engineering Organizations at Queen Sirikit National Convention Center, Bangkok, on Thursday 16<sup>th</sup> November 2017. Thailoil also sent 3 innovations to be part of the exhibition, comprise of In-Pipe Inspection Robot, K-1 Device and Reformer Tube Inspection Tool.

##### Annual General Assembly of Information and Communication Technology State Enterprise Club of Thailand (ICTSEC)

On 13 November 2017, Thailoil was invited by PTT to join the PTT Group's innovation showcase at the annual general assembly, ICTSEC. Thailoil was honored by Dr. Pichet Durongkaveroj, Minister of digital economy and society, who kindly presided over the ceremony and visited the demonstration of "In-Pipe Inspection Robot."



# Our Employees

## Sustainability Goals

Enhancing employee capacity and capability, and strengthening competitive advantage through human resource development as well as becoming a role model in labor rights performance in accordance with international human rights standards

### Current Progress

- Developed a Dynamic Career Management System that allows cross-functional career path development plans and prepares employees for a future setting where interdisciplinary expertise is vital for success (Future People 4.0)
- Organized the Mindful Leadership program to inspire employees in their work and provide leadership training
- Implemented the Human Rights Due Diligence Process

### Strategies to accomplish goal within 3-5 years

- Develop a proactive recruitment strategy to recruit exceptional individuals.
- Initiate capacity building and human development programs through the People 4.0 strategy to prepare employees for business expansion and digitization.
- Execute the Gen 2 Gen Knowledge Management Program to better manage organizational knowledge and ensure a continuous sharing of knowledge gained from older employees to newer ones.
- Execute the Leader Drive Culture program to promote company culture and employee engagement.
- Extend the human rights due diligence process coverage to include the entire business value chain.

## Commitment

Thaioil and Subsidiaries endeavor to recruit exceptional and ethical individuals with the objectives to – “achieve business stability and create value through human excellence”. In the context of intense business competition, the employees who make up the business are the single most important source of force and strength to secure business success. Thaioil and Subsidiaries consider human resource management and development and human rights performance, one of the most pressing issues in strategizing sustainable development.

## Challenges and Opportunities

Various challenges press the need to adapt and develop human resource. Current global trends, i.e. industry 4.0, towards automation and digitization bring with them demands for new skills and more diversity. Additionally, upcoming retirement in the next 10 years and plans for business expansion require a larger workforce. However, at the same time, growing competition in the job market means it is increasingly challenging to recruit needed skilled labor.

## Human Capital Development

employees received training and development programs as planned

85%

417 million Baht spent on employee training and development

## Employee Engagement

turnover rate

3.26%

89% employee engagement

## Knowledge Management

111 topics Knowledge Sharing in the KM System from Thaioil's Wisdom and Innovation Award 2017 and Knowledge Transformation Project.

## Human Rights

100% operations subjected to a basic human rights assessment

0 human rights complaints

## Sustainable Development Goals (SDGs)



## Management Approach and Performance

### Talent Attraction

Thaioil and Subsidiaries endeavor to recruit exceptional and ethical individuals who are passionate about the business's mission and vision. The current management approach used to achieve this target is the 4B Strategy (Build, Buy, Borrow, and Bring-in). This proactive recruitment strategy focuses on attracting the attention of the target group and building company trust through the Institute Relations Management (IRM), which is collaborating with higher educational institutions to connect with students currently completing a bachelor's degree or vocational degree program. Outreach programs such as the Campus, Road Show and the Talent Camp focus on supporting students in their career exploration plans and applications process, and raising our brand awareness. The Thaioil Ambassador Program focuses on developing a talent candidate pool for future recruitment and maintaining continuous communications with candidates.

### Employee Retention

In 2017, Thaioil and Subsidiaries started integrating the Employee Engagement System into the overall sustainable

### Employee Welfare and Benefits

One of the main goals of business sustainability is talent retention. The Company annually monitors employee welfare and benefits to remain competitive with leading companies. For 2017, Thaioil made the following changes in the employee welfare and benefits package:

- Increased financial support for the education of employees' children
- Initiated financial support for employees' special education programs which enhance their own specialist.

development strategy with the use of the employee satisfaction and engagement survey. Internal and external results were applied to company-wide operations, including the alignment of the Employee Engagement System with the TOP Group Culture, data analysis for strategizing both short-term and long-term development, and the application of the developed strategy into actual operations. This follows with sustainable development principles, and reflects how Thaioil and Subsidiaries aim to be a strategy-based organization that turns strategy into reality, and goals into outcomes.

It was agreed by all functions that employee engagement should be a priority, and that all functions would develop initiatives to

increase employee engagement. As a result of these efforts over the past year, Thaioil and Subsidiaries were able to address gaps and surpass its target. For 2017, employee engagement was at 89%, exceeding the target of 83%, and employee satisfaction was at 92%, the highest score the company has achieved. Thaioil and Subsidiaries remain as the industry leader in employee engagement and satisfaction for the Oil & Gas sector.

This, of course, does not mean that the work stops here. Thaioil and Subsidiaries are still determined to further improve organizational health, work on keeping employee engagement at high levels, and maintain satisfaction and sustainable growth for employees.



*"I am so proud of being a part of Thai Oil, producing oil for people to commute to work, and to get their way back home"*

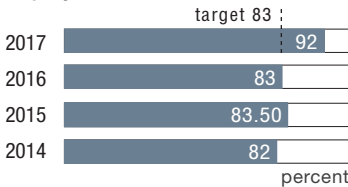
Khomkrit Panyawai  
Refinery Operator

## Performance

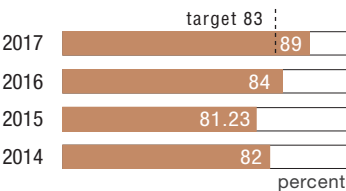
### Recruiting Capability



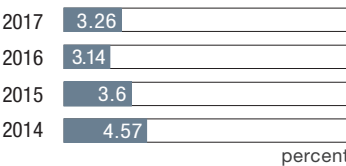
### Employee Satisfaction



### Employee Engagement



### Employee Turnover Rate





## Human Capital Development

Challenges such as keeping up and remaining competitive in Thailand 4.0 and the VUCA world mean Thailoil and Subsidiaries need to better manage and align employee capacity development with strategizing growth. Thus, DANCE+, a new competency development plan, has been created to transform the current career management system into a dynamic career management system.

Dynamic career management means creating new positions to support business growth and the career path of that position.

DANCE+ contains 5 specific competencies. The Company continues to use the 70-20-10 principle to practice skills that are applicable for work.



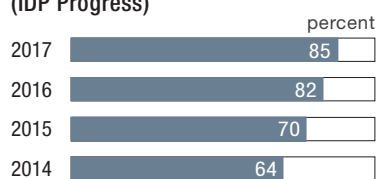
As for the existing competency development program, Thailoil and Subsidiaries continue to focus on capacity development by encouraging managers on the importance of Individual Development Plan (IDP) setting, providing skills training opportunities for employees following the 70-20-10 principle, and ensuring effectiveness in employee training. The past year, the rate of employees who completed IDP increased from 89% to 97%.

With IDP expectations that emphasize a balance between quality and quantity, a monitoring and tracking progress system that yields relevant results for managers, and continuous communications between managers and employees on achieving IDP targets, Thailoil and Subsidiaries successfully ensured that employees achieved an average of 85% of IDP progress.

Additionally, measures were put in place to ensure that leadership development programs are relevant and proper for achieving business goals in knowledge and talent management. The Leadership Capital Index (LCI) was developed to allow assessment of leadership competency from three dimensions – organizational human capability, leadership readiness, and leadership sustainability.

### Performance

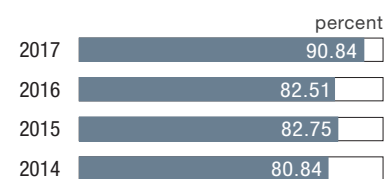
#### Employees who have received training an development programs as planned (IDP Progress)



#### Employees who were promoted to managerial level



#### Human Capital Index (HCI)



#### Leadership Capital Index (LCI)



## Knowledge Management

Managing knowledge within the organization aims to capture the tacit experience and expertise of individual employees. This creates important opportunities for the organization to increase competitiveness and maximizes its potential. Thailoil has continuously emphasized the importance of capturing and sharing knowledge through innovation, best practices, operational excellence, improvement plan, usage of tools and equipment and other forms of auxiliary knowledge. Knowledge Management within the organization has proven to be beneficial to Thailoil's business.

In 2017, an analysis shows that 25% of Thailoil employees will retire within ten years as compared to more than 35% of current employees having less than five years of experience in the organization. Knowledge Management has become crucial to Thailoil. It is thus determined

to identify and capture experiences and knowledge of employees in every field to sustain the business operations. The Company launched "the Generation to Generation Knowledge Management Project" with the objectives to:

1. Build a system and structure to facilitate the capture and management of knowledge within the organization
2. Disseminate knowledge from one generation of employees to another
3. Enable the implementation of knowledge to create business value

The project was launched in May 2017 and is expected to be completed by February 2018. The initial plan focused on revisiting current knowledge and analyzing whether it has been properly managed. The result of the project is the Knowledge Architecture Map and the KPI was to measure the %

Readiness of Critical Knowledge. The project gave employees the opportunity to work closely with supervisors to gather knowledge within their field and synthesize with their knowledge from other fields for an efficient One Synchronized Knowledge Management.

In addition, the Company also implemented the programme Adopt Best Practices with Excellence Knowledge in 2017 as one of corporate KPIs. It promotes the creation and implementation of Best Practices to increase competitiveness. In 2017, there were 111 pieces of knowledge submitted, of which 41 were classified as Best Practices. These Best Practices include Crude Purchase Work Process, Owner Controlled Insurance Program (OCIP), and SSHE Construction Management.

## Human Rights

Thailoil and Subsidiaries are determined to manage human rights risks to prevent and avoid human rights violations in employee practices, the practices of business partners (i.e. suppliers, contractors, and customers), and practices that affect community rights and/or environment-related rights such as access to natural resource, water, land, forestry, fisheries, and the right to live in a pollution-free environment. The Company commits to respect human rights throughout entire value chain and operate in accordance with the UN Guiding Principles on Business and Human Rights (UNGPR).

Over the past year (2017), The Company assessed potential human rights violations – or human rights risks – throughout operations, including risks of community rights violations in development projects, risks of labor rights violations in the use of subcontracted labor and migrant labor (i.e. Clean Fuel Project (CFP), Jetty 7/8 Project, New Crude Tank Project, etc.),

and risks of rights violations from business partnerships such as a supplier's inadequate health and safety measures. Seeing as these risks may create adverse impacts on the operations and reputation of the organization, the Human Rights Due Diligence (HRDD) process has been applied to formalize the management of human rights risks.

### The Human Rights Due Diligence Process

- ▼ Integrating human rights into new and existing policies
- ▼ Engaging with stakeholders on a wide range of human rights issues
- ▼ Training employees on human rights and developing their competency on human rights
- ▼ Evaluating risk assessments across its activities and assessing human rights impacts in high risk operations
- ▼ Integrate and Act on Findings
- ▼ Identify and Remedy Grievances
- ▼ Track and Monitor
- ▼ Communicate and Report

## Human Rights Policy

Thaioil has published Human Rights Policy in operating areas and Human Rights Policy for suppliers and other stakeholders (available at <https://www.thaioilgroup.com/home/content.aspx?id=160>). In 2017, Thaioil and Subsidiaries also committed to a human rights due diligence process which includes continuous monitoring and assessment of the human rights policy and the organization's human rights performance, and periodic updates to keep the policy relevant with changes in the industry, Thai regulations, international regulations, and other relevant standards such as the Constitution of Thailand, the Universal Declaration of Human Rights, UN Guiding Principles on Business and Human Rights, and ILO Declaration on Fundamental Principles and Rights at work.

## Stakeholder Engagement Concerning Human Rights Performance

Thaioil and Subsidiaries assessed human rights risks for a variety of vulnerable groups including women and children, local communities and the migrant workforce, the disabled, the aged, and related stakeholders including employees, suppliers, contractors, subcontractors, communities, and customers. Here, stakeholder engagement was done through the public engagement forum as a part of the Environmental Impact Assessment process to determine potential environmental impacts and

preventative and mitigation measures needed.

A public engagement session with local citizens and stakeholders at the Ao Udom Community Center at Amphoe Sriracha, Chonburi province was organized to review the Environmental Impact Assessment report draft for the Thaioil Refinery Project at Sriracha, Chonburi province. Many local government officials, community leaders, and citizens living within the 5-km radius who may be

impacted by the project participated in this meeting. Feedback and recommendations received were then taken to design preventative and mitigation measures.



## Employee Training and Capacity Development on Human Rights

Thaioil and Subsidiaries have integrated the Human Rights Policy and principles into Individual Development Plans to foster an awareness and understanding of human rights for employees of all levels. This includes integrating human rights training into employee orientation programs and communicating human rights progress through internal channels such as the E-Newsletter.

In 2017, there was a human rights training for managers and employees on the human rights policy and practices of the Company, and the rationale behind these policy and practices – i.e. to prevent human rights violations in operational areas, as well as to avoid complicity in human rights violations

in the value chain.

Thaioil and Subsidiaries dedicated three volumes of the monthly company newsletter Akanee and three volumes of the company E-newsletter to raising employee awareness of human rights issues in the business sector.



## Human Rights Risk Assessment and Mitigation Measure

Thaioil and Subsidiaries have committed to a human rights risk assessment that covers all operational areas. Through the human rights risk assessment, operational areas of high risks were determined and assigned appropriate management measures to mitigate and control impacts with reference to existing systems such as the management approach for sustainability, the management approach for security, safety, health, and environment, and the management approach for community engagement.

## Managing Complaints and Remediation Measures for Cases of Human Rights Violations

Thaioil and Subsidiaries are determined to actively manage human rights grievances, and have supported the Employee Committee in their collective bargaining rights through working with the trade union (Trade Union of Thai Oil Refinery). In 2017, there were a total of 519 employees, or 75% of all Thaioil employees, who were a part of a trade union. Additionally, the

Employee Committee meets every 2 months to discuss any raised issues and communicate any changes in organizational structure.

In 2017, Thaioil and Subsidiaries also reviewed the effectiveness and human rights coverage of existing grievance mechanisms and protective measures

for the complainant (i.e. anonymity). The grievance mechanisms are currently based on the existing complaint procedure in the Employee Blue Book, with integrated human rights principles and specific procedures for community rights risks.

## Monitoring and tracking risks, actual impacts, and effectiveness of the management approach

Thaioil and Subsidiaries have established a system to monitor and track human rights performance in order to ensure effectiveness in the management approach. Business partners are expected to assess their own operations of human rights issues to comply with the human rights risk management approach, plans, and policies of the Company.

## Reporting and disclosure

Thaioil and Subsidiaries use communication channels to report and disclose human rights performance of the organization's own operations and suppliers' operations to stakeholders through the website and sustainability report. More details in: <<https://www.thaioilgroup.com/home/content.aspx?id=160>>

### • Raising human rights awareness in health and safety issues, accidents, and addictive substances for employees and contractors

To prevent accidents in the workplace for contractors and foreign workers, Thaioil and Subsidiaries organized a campaign to raise awareness on safe practices and to encourage the use of a pre-job safety risk assessment procedure (7 Safety Risks). The Safety Handbook was also translated into different languages to ensure that expected safety practices and procedures were communicated to all workers. Site visits were done to monitor employees

and contractors. Additionally, Thaioil and Subsidiaries partnered with contractors and related government agencies to inspect facilities for drug use. For the first time, if any trace of drug use is found in an employee who is encouraged to join a program to quit drug use. Progress in the program is monitored monthly, and the employee is allowed to work again only in case of proved no longer using drugs.



### • Human rights management for vulnerable groups in the community

Seeing as elderly people are a vulnerable group in the community, Thaioil and Subsidiaries have collaborated with Laem Chabang Hospital and Laem Chabang Municipality to develop a program to support their livelihoods. The first phase of this program is data collection to determine the current self-care capabilities of elderly people aged over 55 living in the 10

communities around the refinery. The surveys and interviews were done over the past year by third-year pharmacology student volunteers from Silapakorn University. The results gained from this study will be used to design a support program for healthy aging and an elderly care program that will include public health and welfare benefits for the aged of the community.



Through consistently monitoring and assessing human rights risks and impacts over the year and committing to upholding human rights in operations and projects – i.e. ensuring equal opportunity for all employees with no discrimination based on gender, ethnicity, race, or religion, and operating responsibly with regards to environmental, health, and safety impacts on surrounding communities – Thaioil and Subsidiaries found that human rights residual risks throughout the value chain for 2017 have been properly mitigated and managed, and remain at low levels.



# Occupational Health and Safety

## Sustainability Goals

**Process safety:**  
Have zero hydrocarbon leak incidents and zero severe impact LOPC incidents (Tier 1) by 2018

**Occupational Health:**  
Achieve Health Performance Indicators (HPI) of 3.8 points (out of 4.0 points) in accordance with IOGP and API/IPECA standards by 2018

**Personal Safety:**  
Achieve Level 4 of Safety Maturity Level by 2022

## Current Progress

Identified and assessed risks that contribute towards LOPC incidents in each production area, and designed appropriate preventative measures and controls

Developed LOPC risk profile and continuously monitored effectiveness of implemented preventative measures

Audited and analyzed safety measures and risks throughout the production process to design addi-

tional mitigation measures to prevent any repetition of the same incident

Perform monthly management reviews of occupational health and safety performance of the production process

Developed the 12 Life Saving Rules and deploy to employees and contractors

Raised awareness and encouraged the sharing of Potential Incident Reports

(PIRs) focusing on unsafe acts and unsafe conditions

Further developed the Safe White Green initiative through the QSHE Roll Out program and organized activities in all areas to raise awareness and foster a safety culture

Extended the scope for the safety assessment to LABIX and TOP SPP, and cover areas beyond oil refineries such as the headquarters

## Strategies to achieve sustainability goal within 3-5 years

- Review the master 5-year sustainability plan (2018-2022) to align process safety measures accordingly, and strategize development plans to achieve best practices in safety measures
- Develop a Safety, Security, Health, and Environment Management Handbook for construction projects that covers use of migrant labour (CLMV) for projects of Thail and Subsidiaries

## Process Safety

**3** cases  
of incidents of chemicals leakage, inflammables, or other materials from main containers or production processes with severe impact (Tier 1) according to API 754

## Personal Safety

**0** cases  
No work-related fatality over the past 18 years

## Occupational Health

**100** %  
Of new employees who conducted health risk assessment.

Health Performance Indicators: HPI

**3.70**  
out of 4.0

## Sustainable Development Goals (SDGs)



## Commitment

Thail and Subsidiaries commit to becoming an accident-free organization for all employees, contractors, and relevant stakeholders. Thus, with the support and endorsement of the organization's leadership, an annual safety strategy plan for 2017 was developed. The plan covered review of safety management system and conduct risk assessment of severe incident, including working permit of operating in high-risk situations. The resulting management approach, including a safety checklist and a pre-job risk assessment, has been communicated to relevant functions to ensure efficient and effective safety practices. Monitoring and tracking processes such as onsite audit, assigned key performance indicators (KPIs), and periodic reviews by managers are conducted consistently to provide the best possible protection to employees, contractors, community members, and the environment.

## Challenges and Opportunities

With the aging refinery of longer than 50-year operation, the expansion and new development to improve reliability is necessary. These upcoming construction projects imply more risks in managing migrant labour (Cambodia-Laos-Myanmar-Vietnam: CLMV) who may come into the area and live alongside local communities. In order to be an accident-free organization, Thail and Subsidiaries will need to learn how to navigate differences in the languages, cultures, and safety mindsets of the increasingly large and diverse workforce. Additionally, with progressively stringent regulations and safety standards, the Company also need to strengthen the safety management measures to consistently and comprehensively manage all risks, including but not limited to risks in transport and logistics, emergency management, natural disasters, protests, and terrorist attacks.

## Management Approach and Performance

### Process Safety and Asset Integrity

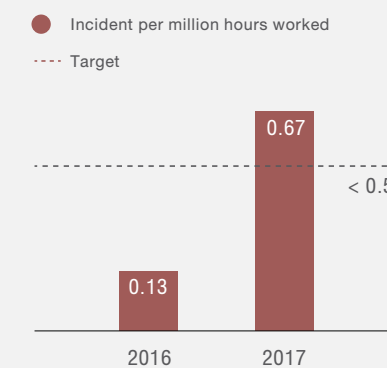
With the Tier 1 (API 754) leak incidents of flammable liquids in 2017, process safety and asset integrity emerged as a major material issue for the energy industry this year. Although the detection system and safety staff put in place allowed prompt control of all three leak incidents, a safety assessment of operations was deemed necessary. Thail and Subsidiaries thus assessed the organization's distillation units, equipment, and areas with high potential LOPC, reviewed existing mitigation measures, and monitored performance to ensure process safety and asset integrity. Results from this assessment were then used to develop a strategy to strengthen safety management as per OSHA standards. Additionally, The Company also identified loss of primary containment (LOPC) risk areas for each operation unit, assigned mitigation

measures and responsible functions, registered LOPC risk profile, and committed to periodic monitoring of safety measures by both internal and external experts.

All production sites are audited as per the established safety checklist. Past incidents are analyzed for recurring causes, and recommended measures are developed to prevent any repetition of the same incident. Leading indicators are set to assess the practicality and effectiveness of recommended measures. Overall safety management in the production process is subjected to monthly reviews by managers. All these expectations and practices are communicated to employees and contractors to ensure mutual understanding and prevent any adverse impact towards livelihoods and/or facilities.

## Performance

Loss of Primary Containment Rate: LOPCR



\*As the 2017 performance in LOPCR (per million hours worked) was higher than the target, Thail and Subsidiaries initiated other projects such as the Process Safety Compliance and Process Safety Benchmarking to better address safety hazards and enhance efficiency in safety measures to ultimately create the safest possible environment and achieve targets.

Personal Safety

Building a strong safety culture that resonates in every part of the company is vital to becoming an accident-free organization. Thus, Thailoil and Subsidiaries have consistently prioritized initiatives to foster a safety culture and encourage employees to take ownership and leadership of safety in the workplace through the Safe White Green Initiative. In 2017, the pre-job 7 safety risks assessment procedure and the 12 Life Saving Rules were communicated to employees and contractors through posters and direct communications. There was also a campaign to encourage submissions of Potential Incident Reports (PIRs), with a focus on understanding unsafe acts, unsafe conditions, and potential prevention measures.

12 Life Saving Rules

- 

1. Work with a valid work permit when required
- 

2. Conduct gas test when required
- 

3. Verify isolation before work begins and use the specific life protecting equipment
- 

4. Adhere to Hot Work Precautions at all times
- 

5. Obtain authorization before entering a confined space
- 

6. Obtain authorization before overriding or disabling safety critical equipment
- 

7. Protect yourself against a fall when working at height
- 

8. Do not walk under suspended load and barricade area
- 

9. Do not smoke outside designated smoking areas
- 

10. No alcohol or drugs while working or driving
- 

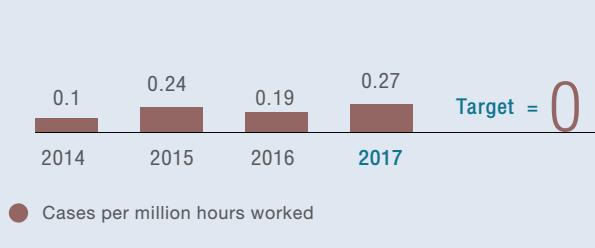
11. While driving, do not use your phone and do not exceed speed limits
- 

12. Wear your seat belt

Moreover, Thailoil and Subsidiaries have extended the Safe White Green Initiative through the QSHE Roll Out program. Through this program, safety activities are rolled out across different sites of operations and construction to promote a proactive strategy to raise awareness of safety issues and create a safety culture. The QSHE Day 2017 was also organized under the Safe White Green Initiative for employees and contractors to highlight and communicate successes and results of safety operations in 2017, and share future plans for 2018 that will strengthen a culture of safety, security, and environmental stewardship.

Performance

Contractors' Lost Time Injury Frequency Rate (LTIFR)



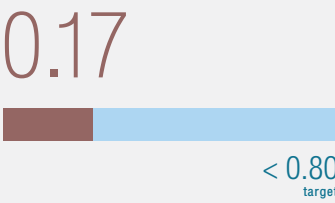
Employees' Lost Time Injury Frequency Rate (LTIFR)



SAFE

Accident-free workplace

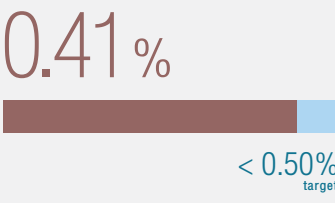
2017 was the first year that Thailoil and Subsidiaries succeeded its accident rate at lowest 0.17 per million hours worked, also achieving the target.



WHITE

Drug-free

Drug test result (contractors)  
Tested positive,



GREEN

No environmental impacts and complaints

Complaints regarding the environmental impact

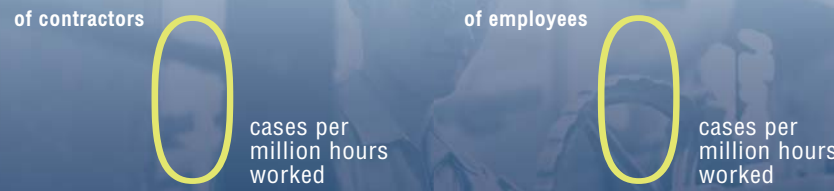
0 incidents  
Target achieved



Occupational Health

Over the past year (2017), Thailoil and Subsidiaries emphasize on audit and control measure to ensure safety workplace for employees, contractors, and related stakeholders. The occupational health risk assessment covers physical and chemicals, was conducted for LABIX Company, TOPSPP Company, and also extended to employees and contractors in non-operation areas. The scope of inspection was also extended, with body inspections for chemical residues added. The results of Health Performance Indicators (HPI) according to IOGP and API/IPECA complied with international standards, and the Company was scored 3.7 out of 4.0, which was an increase of 0.2 points from 2016 performance. The goal for next year thus will be 3.8 for 2018 and 3.9 in 2019.

Occupational Illness Frequency Rate (OIFR) 2014-2017



Emergency Preparedness and Crisis Management

Thailoil and Subsidiaries have reviewed high-severity risks and emergency plans, especially in chemical spills during marine transfer, and have organized emergency drills of various levels such as Table Top Exercise (TTX) and Field Training Exercises (FTX). These emergency drills have recently been extended to include crisis drills, with the participation of both internal and external parties and local government.

The Company employ experts to inspect and maintain all fire equipment to ensure availability in the case of an emergency. Furthermore, all fire equipment and the existing pre fire plan have been updated for enhanced efficiency and decreased levels of risk. A dry run with the shift manager is carried out at least twice per year.

To maintain a prompt and efficient crisis management system that meets global standards, the external incident cases and best practices have been learnt. Thailoil and Subsidiaries continue to review and improve safety measures during the production process, crisis management measures, and measures to prevent severe accidents. Thanks to all these efforts, 2017 passed with no severe accidents that disrupted operations.





## Sharing Value

Thaioil and Subsidiaries share values with the community and incorporate the voices of all stakeholder groups to co-create an inclusive future through sustainable development.



Society and  
Communities



Supply Chain

## Our Society and Communities

### Sustainability Goal

- To inclusively engage community and address the true needs of the community. This contributes to peaceful coexistence and enhances well-being of the community.
- To better integrate CSR project with the business, and follow the Social Enterprise (SE) approach and Creating Shared Value (CSV) principles
- To sustain business operations based on community trust, collaboration with community members, and a strong social license to operate

### Current Progress

- Work with 10 communities surrounding the refinery, maintain good relationship, develop engagement
- Increase communication channels so that communities can get accurate information directly from the Company while the Company can also address the complaints effectively.
- Successfully executed social impact programs and maintained positive organizational reputation through transparent disclosure and consistent communications

### Strategies to achieve sustainability goal within 3-5 years

- Outline development plan, support knowledge sharing with a focus on community participation, and strengthen communities so that they can be self-reliant and all stakeholders have strong relationship among themselves.
- Assess Social Return on Investment (SROI) of CSR projects
- Expand CSR network to increase positive impact on the community, including building a volunteer culture amongst employees
- Complete a more detailed and comprehensive assessment of community engagement among communities surrounding operating area
- Strengthen community partnerships

### Value to Stakeholders

983 households

23 public places

benefited from community development projects all over the country, including projects on education, environmental conservation, energy and natural resources, and quality of life.

51,649

individuals who have benefited from the Thailoil Health and Education Community Center

Founded

### Social Enterprise

business through supporting and endorsing products from the Nong Tong Lim community through the "Build a Canal, Build a Community" project at Buriram province. This project also develops a Community Enterprise for Organic Rice Farming".

### Value to Business

93.5%

engagement rate achieved from surrounding communities

17,672 volunteer hours

from employees involved in CSR projects and activities in 2017.

### Sustainable Development Goals (SDGs)



### Commitment

Thailoil and Subsidiaries believe in the business sector's responsibility towards society and the environment. This belief is reflected through the various projects, initiatives, and collaborations with the communities that includes communities around the refinery and a whole society at the national level. Through a review of past performance, Thailoil and Subsidiaries have launched a process to further integrate these CSR programs with the business itself, and ultimately enhance a CSR strategy that better follows the social enterprise (SE) approach and the Creating Shared Value (CSV) principles. Through these changes, Thailoil and Subsidiaries believe that the CSR

strategy will be able to better support and strengthen the grassroots economy of the country. The long-term strategy and plan to achieve this goal includes initiatives ranging from using the organization's knowledge and expertise on engineering and energy to support renewable energy projects, to supporting the professions and products of the community and assisting in product and service development to achieve the highest benefits. All these initiatives will be directly connected to Thailoil and Subsidiaries by helping the business achieve high impact business growth and gain more public participation in business operations. In 2017, Thailoil and Subsidiaries collaborated and

invested with PTT Group to establish the Sam Palung Social Enterprise (SPSE) with intention to help solve social problems, develop community livelihoods and increase local hiring.

Thailoil and Subsidiaries aspire to operate with full transparency, stability, and sustainability to gain the acceptance and trust of society and local communities. This will be done firstly through intensive research to develop an understanding of all stakeholder needs, develop a CSR network to achieve highest impact, and promptly assist disaster-affected groups.

### Challenges and Opportunities

Thailoil and Subsidiaries have developed a long-term business plan and are currently in the process of completing a feasibility study for the Clean Fuel Project (CFP). The CFP will increase competitive advantage and contribute to the development of the energy industry. The refining capacity will increase from 2.75 hundred thousand barrels per day to 4 hundred thousand barrels per day. Technology and innovation will have to be upgraded to increase efficiency and effectiveness of low-value products. Fuel oil products may be replaced by diesel fuels and aviation fuels. Refining process may be developed for more flexibility to process

heavy crude oil in low costs while still having long product lifetimes.

The CFP is the biggest and most complex challenge that Thailoil and Subsidiaries have ever taken. Seeing as it has tremendous potential to create economic opportunities for the country, Thailoil and Subsidiaries recognize the importance of every single step in the process, especially in responsibly caring for the community to earn their trust and securing their safety and health. Thus, a Community and Public Relations Plan has been developed to ensure that CFP developments are in harmony with the local communities' livelihoods, and to strengthen the community's

trust concerning the company's actions regarding health, environment, and culture. If the Project is executed according to set targets, there will be an overall positive economic net effect to the community through more cash flows and a more active economy during the construction period.

Nonetheless, in the area of adverse impacts on the environment, society, and the communities' livelihoods, Thailoil and Subsidiaries have planned preventative measures, operated according to plans and standards, and monitored all impacts to maintain strong relations with the community.



*"Thailoil Group Community Health and Learning Centre, and the way we keep engaging the folks through various activities, are because we would like to show our sincerity that we care to be their long-term partner. This also sustains our business."*

**Chalida Manpadung  
Pokked Pramsang**  
Officer - Community Affair



## Management Approach and Performance

### Corporate Social Responsibility



Thaioil and Subsidiaries emphasize a collective management approach to achieve best proper governance and ensure business growth. Thus, a policy and handbook has been developed over the past year (2017) under the TOP Ways of Conduct (TOP WOC) project. This counts as another avenue to oversee policy compliance for Subsidiaries with more than 75% shared by Thaioil i.e. Thaioil Marine Company Limited (TM), TOP Solvent Company Limited (TS), and Sak Chaisidhi Company Limited (SAKC). The Subsidiaries are encouraged to develop their own policies under the umbrella of the TOP WOC, and share experiences and lessons learnt in CSR work with each other. The CSR policies under this management approach was announced in 2017 as a management approach that considers the rights of all associated stakeholders, including shareholders, employees, customers, suppliers, communities, the society, and the environment. Thaioil and Subsidiaries hope that employees of all level will value their responsibilities towards society and the environment, and together represent an organizational culture centered on social responsibility.

### Strategic targets –

Thaioil and Subsidiaries have collaboratively developed a CSR Plan with defined KPIs in establishing a CSR committee for each subsidiary. Responsibilities are as follow:

- Establish and review CSR policies and strategies as needed
- Develop an annual social activity plan that aligns with the central business strategy
- Develop a public relations plan and communicate performance with society alongside Thaioil
- Oversee and manage CSR budget allocation
- Develop a volunteer culture and system
- Grow a network of CSR workers with stakeholders
- Represent one's subsidiary in the CSR Committee of Thaioil and Subsidiaries

Other than these achievements, The Company have developed and disclosed a Corporate Social and Environmental Manual that includes general information about social responsibility principles, CSR management systems and roles, and stakeholder engagement procedures for all CSR projects. All information is

recorded in the ISO system such that any employee can access information to learn and apply in their daily tasks.

### Performance according to the three management approaches:

#### 1. Knowledge sharing with local communities

Thaioil and Subsidiaries have expanded the CSR Network and further collaborated with PTT Group to share lessons learnt, expand engagement with local communities, and strengthen volunteerism in the organizational culture. Some highlights include:

- **Pracha-Rat Project (public education):** through collaborating with PTT Group, Thaioil and Subsidiaries participated in leadership development programs and programs to support the next generation in schools. Six schools participated in 2017. Thaioil and Subsidiaries supported each school with 500,000 Baht, and assigned the CSR Function Manager to act as a School Partner (SP). Additionally, Thaioil and Subsidiaries also volunteered through the Light for a Better Life project, wherein expertise in electrical engineering

supported a community in conducting electrical safety inspections in the school.

- **Co-investments in establishing the Sarn Palung Social Enterprise (SPSE):** Thaioil and Subsidiaries supported and endorsed small businesses, backed up local employment, and participated in social and environmental development through investing in the SPSE. The SPSE bears no responsibility to maximize value for shareholders, and at least 70% of its profits will be invested into community projects and public benefit programs to support farmers, the poor, the disabled, and the less advantaged. Thaioil and Subsidiaries plan to start doing field research in 2018 to better understand stakeholders' demands and complete the feasibility study.



- **National-level project development (in research stage)** Thaioil and Subsidiaries have developed new areas for renewable energy projects for the community. In 2017, data collection was completed for two areas in consideration:

1) A renewable energy project at Baan Jo Leu Nua village, Sob Moei district, Mae Hong Son province in collaboration with the School of Renewable Energy at Maejo University to develop renewable energy technologies and solar energy solutions to support local products and increase local incomes

2) A project to construct a Renewable Energy Education Center based on the Philosophy of Sufficiency Economy at the Baan Huay Tong Border Patrol Police Academy of the 42nd Border Patrol Police Department at Moo 7, Krung Ching, Nopphitam district, Nakhon Si Thammarat province to build the "Solar: The Light of Education" Project.

### 2. Collaboration and partnership

- **Sustainable natural disaster response plan development (in research stage):** in collaboration with PTT Group and public networks, as the past few years have seen natural disasters create severe, adverse impacts to thousands of lives – i.e. the floods, droughts, cold, and earthquakes – In 2017, Thaioil and Subsidiaries have grown the volunteer base through television channels, volunteer organizations, and social networks. This volunteer base, consisting of employee volunteers and other interested individuals, support disaster-affected groups through volunteering onsite and donating funds and materials to the Red Cross Society, Arsa Dusit Group, City Rescuers Group, and PBS Channel. In addition to helping affected citizens, Thaioil and Subsidiaries also helped in the restoration of three schools in the South that were affected by the floods.

### 3. Building a volunteerism

Thaioil and Subsidiaries have continued to build and foster a volunteer culture within employees.

- **"Volunteers for the Father":** This activity was done in mourning for the loss of His Majesty the late King Bhumibol Adulyadej on 13<sup>th</sup> October 2016, and in reminiscence of his grace. Through this activity, employees, local community, and family members together volunteered continuously through 2016-2017. Over 2,000 volunteers together offered 13,000 hours of work. Specific activities that volunteers assisted with included a collaboration with PTT Group at Sanam Luang during 5-9th December 2016, the Royal Cremation Ceremony at Wat Theptidaram during 20-26th December 2017, the making of 10,999 sandalwood flowers and 10,000 bottles of herbal oils for the cremation ceremony, and the planting of marigolds.



- **Function-specific volunteer activities:** Thaioil and Subsidiaries support these activities through providing necessary equipment.
- **Activities with stakeholders:** These activities are annually done to support sustainable business operations in partnership with customers, business partners, and investors.

### Community Participation

Thaioil carried out various activities together with 10 communities surrounding the refinery in Sriracha area, with the collaboration of Laem Chabang City Municipality, Laem Chabang Hospital and educational institutions, according to the Principle of Operation (3 Synchronizations) and the "5 Together" Conceptual Framework of Think Together, Act Together, Correct Together, Learn Together, and Develop Together. The objectives were to encourage engagement in community development and promote self-reliance so that community could be strengthened. The activities were divided into four aspects: 1) social aspect which includes support for religion, tradition and culture, 2) health aspect, 3) education aspect, and 4) environmental aspect, based on holistic development principle.

### Grievance and Whistle-Blowing

Thaioil has standard procedures for addressing grievances relating to the occupational health, safety and environment from nearby communities with 30-minute response upon the receipt of whistle-blowing. In 2017, Thaioil systematically responded to all 24 whistle-blowing cases according to the grievance mechanism. However, it was found that none of these 24 whistle-blowing cases was caused by the Company operation.

Community and Social Development Projects in accordance with the CSR Framework

Thaioil and Subsidiaries have led CSR and community and social development projects following the organization's strategy with four chosen focus areas – education, energy and natural resources, environmental conservation, and quality of life.

Education

Ao Udom Fishery Group Visiting Project

Fishery is a traditional occupation of the Ao Udom community. The number of fishermen is declining but it is still the main occupation of many households in the area. However, a decline of aquatic animal resources has affected the income of fishermen. Thaioil recognized this problem and worked hard to support and develop self-reliant and sustainable fishery.

- 1. Increasing aquatic animal resources including crab and shrimp larvae in Ao Udom sea in a variety of occasions e.g. Mother's Day, Father's Day, and other special events. The survey showed increasing number of animal resources and higher income.
- 2. On-site visits in other areas and adaptation in local fishery. In 2017, Thaioil organized for the Ao Udom local fishermen a visit to mangrove conservation areas in Chantaburi and Trat Provinces as mangrove forest in the nursery ground for aquatic animals and conservation helps increase number of animals.



Continuing Projects

"Weaving the Dream, Building the Community" Youth Leadership Camp

Result of the Project

Selected representatives from 10 communities surrounding the refinery to join the program. Children got to learn about the environment and were provided the opportunity to express themselves in various activities at Baan Rim Nam Scout Camp, Bang Pakong District, Chachoengsao Province. Mentors in this program were the children from the 13<sup>th</sup> Science Culture Youth Camp and youth volunteers.

Public-Private Collaboration project Primary Education and Leadership Development Project (E5) and Leaders for Sustainable Education Development Project (CONNEXT ED)

Thaioil and Subsidiaries supported the development of the following projects in six schools, including Wat Don Sai School, Wat Sanam Chan School, and Wat Prasat Sophon School at Baan Pho District, Chachoengsao province, and Baan Nong Kayad School, Baan Nong Ka School, and Baan Nong Song Hong School and Phanat Nikhom district, Chonburi province. The programs focus on ten areas:

- 1. School transparency
- 2. Marketing and community engagement
- 3. Access to digital infrastructure
- 4. Student-centered curriculum
- 5. Administrative and teacher development
- 6. English enhancement
- 7. Building a strong sense of ethics, justice, and volunteerism in students
- 8. Technological education developments
- 9. Incentives and benefits for Thai and foreign educational experts
- 10. Developing and supporting the next generation



Developing six schools with the following focused projects:

- 1. Renewable Solar Energy Project
- 2. Organic Agriculture and Philosophy of Sufficiency Economy (PSE) Project
- 3. Education Development Through ICT Project
- 4. Vocational Skills Development Project (i.e. homesteading, arts and crafts, barbering)
- 5. Media Development Project for Primary School Students
- 6. STEM, English, and Ethics Education Project for students and teachers
- 7. Light for a Better Life Project, for better electrical system inspection and maintenance, including the development of fire prevention measures, electric shock prevention measures, and energy efficiency measures

Energy and Natural Resources

Thaioil and Subsidiaries have continued to research and innovate natural products that will decrease GHG emissions in the operations of national projects. In 2017, organizing a volunteer activity through the Health Program with the topic of converting organic waste to household energy for cooking at Mak Noi Island, Phang-Nga province and Nikom Pak Paya, Nakhon Si Thammarat province (2016-2017) was implemented to follow with the organization's commitment to social and environmental responsibility and to collaboratively create shared value for sustainable development.

Continuing Projects

Health Program with the topic of converting organic waste to household energy for cooking

- Mak Noi Island, Phang-Nga province
- Huay Haeng Community, Nopphitam district
- Nikom Pak Paya, Si Thammarat province

This project was done in collaboration with Thaksin University, Phattalung Campus.

Result of the Project

Thaioil and Subsidiaries also committed to a postgraduate-level research study on the use of laterite material for hydrogen sulphide absorption and the creation of 100 blocks of laterite.

The research findings proved that laterite found on Mak Noi Island had high hydrogen sulphide absorption capacities, with the highest absorption rate found being over 90%. Additionally, the material was easy to access and costed relatively low. Thus, it was determined that laterite was a suitable material for hydrogen sulphide absorption. Thaioil and Subsidiaries have then established 89 hydrogen sulphide gas absorption systems made of laterite in Mak Noi Island communities. These systems are established in households that use biogas and have hydrogen sulphide levels over 300 ppm. Thaioil and Subsidiaries have also constructed 11 in-house filtration systems for households in Huay Tong Community, Krung Ching, Nopphitam district, Nakhon Si Thammarat province that use biogas systems. This project garnered the interest of community members, and demonstrates the power of applying international-level research to local community development projects. Thaioil and Subsidiaries are currently continuing the study through exploring the lifetime of hydrogen sulphide absorption of laterite.



Quality of Life

The construction of the "Accident and Emergency Building" for Laem Chabang Hospital is one of the CSR Projects that Thaioil and Subsidiaries organized to enhance the quality of life of Laem Chabang residents and other citizens. This project supports the effectiveness of the hospital and increases the hospital's capacity to accommodate patients and respond to accidents and emergencies. The Accident and Emergency Building resulted from the collaboration of Thaioil and Subsidiaries, Laem Chabang Hospital, Laem Chabang Municipality, Chonburi Province, local citizens, government agencies, businesses, and other entities in Chonburi who desire to contribute to public welfare.



Objectives

- To develop the capacity and effectiveness of the Laem Chabang Hospital
- To support Laem Chabang Hospital in handling emergencies and providing medical aid in accidents
- To decrease risk of fatalities and permanent total disabilities
- To decrease hospital overcrowding

Building Characteristics

- A modern hospital with efficient systems to prevent disease transmission
- A 5-floor concrete building with steel frame covering 5,000 square meters, with each floor covering 1,000 square meters:

Floor 1: Medical Records, Examination Room, Waiting Room, Bills & Payment

Floor 2: 4 Large Operating Rooms

Floor 3: Labour Rooms and Recovery Rooms

Floor 4: ICU/CCU Patient Rooms

Floor 5: Patient Rooms

For the first phase of the project, Thaioil and Subsidiaries were responsible for overseeing all engineering tasks.

For the second phase of the project, construction will be supported by the Laem Chabang Hospital fund; "Fund to support Thaioil Building for Laem Chabang Hospital". This fund consists of donations from citizens, government officials, businesses, malls and shops, corporations, and other associated organizations in Chonburi who desire to contribute to public welfare.

- In process of finalizing procurement plans for the second phase of the project
- Construction should be done and the hospital should be ready to operate by late 2018



### Aging Support Project

Senior Citizen is used for calling people who are more than 60 years old. In other words, they are those that have a lot of life experiences. Thailand is currently going into the aged society. What is most important for senior citizen is maintaining good health.

Good Health means balanced interrelation of physical, emotional, social, and intelligence human conditions.

Thaioil carried out Family and Community Assessment Program in collaboration with Laem Chabang Hospital, Laem Chabang Municipality, and 10 communities surrounding the refinery to promote health and well-being of the people, the community, and the society. In 2017, the Company launched the Aging Support Project by visiting each community and inviting senior citizen to join activities at the community center. Activities include physical exercises which can be adapted at home, breathing exercise for ease of mind, and recreational activities suitable for old age. The Company expected that senior citizen would gain knowledge on how to take care of themselves. The project also created opportunity for senior citizen to spend time together and share experiences.



### Laem Chabang Youth Development Project – From Learning to Implementation

In 2017, Thaioil promoted life-long learning of people of all aged with a focus on youth in 10 communities surrounding the refinery as the Company believed that building a strong foundation for children today will contribute to high quality adult in the future. This helps to enhance good quality of life since young age.

Projects that promote learning process of youth focus on learning outside classroom through games and activities that help build skills in addition to classroom learning. The “Fulfilling Dream...Before Semester Starts” project gathered students in Grade 1 to 6 in 10 communities surrounding the refinery during summer to participate in the team-building activities. The project also helped build inspiration on future career. After this project, the Company, in collaboration with student interns, launched project on “Learning Outside Classroom, Creating Imagination” in June to encourage youth in researching from various sources and supporting creativity. In October, the Company organized an English camp to help children develop their listening, speaking, reading, and writing skills from native speakers and Thai instructors. The camp also promoted teamwork and creativity.



*“I have come here with mom since  
I was 2-3 years old.  
Going to games center has to pay money,  
Coming here gets good health.  
Fully filled with sweat!”*

**Tor and Auto**  
Kid folks who frequently come to  
Thaioil Group Community Health and Learning Center



*Children in the playground of  
Community Health and Learning Center of Thaioil group*

# Value Chain Management

## Sustainability Goal

Managing procurement processes, including risk management, supplier relationship management, and capacity development for procurement functions, to follow with sustainable procurement principles and meet Sustainable Development Goals (SDGs), while also maintaining product quality and customer satisfaction

## Current Progress

Strategized capacity development for all procurement staff, including developing plans to achieve procurement excellence in response to business demand and business growth plans

Solidified procurement processes for responsible practices and increased transparency to build stakeholder trust

Prioritized ESG risk management for high-risk suppliers as a part of the ESG plus verification program

## Strategies to achieve sustainability goal within 3-5 years

### CFP Procurement Principles of Thaioil and Subsidiaries:

**Clear :** Strict compliance with policies and regulations, check and balance system with clear inspection points throughout the procurement process, training and awareness raising of ethics and compliance for suppliers, additional audit led by both internal and external parties

**Fair :** Equal opportunity for all suppliers, transparent and clear communications, easy and equal access to information through the supplier relationship website

### Professional : Develop a bidding strategy

that supports sustainable procurement processes through collaborating with “TOP” Professional Team with representatives from various different functions, employing a global consulting firm to guide the process, and studying best practices, aiming to green procurement.

## Commitment

Thaioil and Subsidiaries have developed a procurement strategy map that aligns with the business's long term TOP-GET-BEST-PLUS business strategy. Economic issues are covered through strict compliance with the business code of conduct, proper risk management, and comprehensive value chain management. Environmental issues are covered through green procurement policies that align with socially responsible business practices. Stakeholder issues are covered through surveying suppliers and supporting their capital management, costs reduction, and business growth plans. Educational issues are covered through Future People 4.0 career development plans under the Thaioil Procurement and Contract Excellence Framework.

## Crude Supply Management

0.15 USD per barrel

increased gross margin from sourcing of new types of crude oil for production.

## Supply Chain Management

100%

new suppliers completed self-assessment on environmental, social, and governance areas (ESG)

99%

critical suppliers on the electronic system to the Supplier Code of Conduct

15%

critical commodity suppliers passed ESG Plus verification according to plans

93%

surveyed critical suppliers conscious of overall Thai procurement practices

## Customer Relations

96%

Customer engagement score

## Sustainable Development Goals (SDGs)



## Challenges and Opportunities

According to the business growth strategy in 2017, procurement appears as a critical issue to ensuring the success of various projects including the expansion of Thaioil refineries, the Clean Fuel Project (CFP), the Thaioil Sriracha Building Project, and the Jetty Expansion 7-8 Project. Major challenges for value chain management include operating efficiently and transparently, maintaining compliance with regulations, and accomplishing targets and goals alongside associated stakeholders.

## Management Approach and Performance

### Crude Oil Supply

In 2017, crude oil supply fluctuated due to OPEC's oil production cut to 32.45 million barrels per day in November 2017 while US crude oil production increased to 9.87 million barrels per day, in the same month. The supply was further fluctuated after a return of oil production from Libya and Nigeria after the pipeline was fixed.

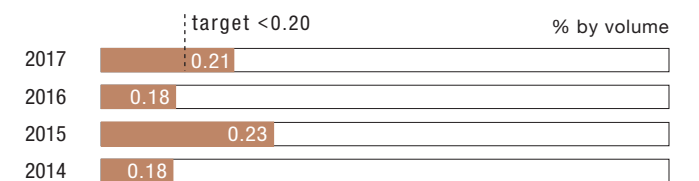
Thaioil mitigated risks from fluctuating crude oil supply and price by reducing supply from the Middle East and increasing its purchase from other regions including America, Europe, and Africa. The Company also purchased new types of crude oil in 2017 and was able to increase gross margin from sourcing of new types of crude oil to 0.15 USD per barrel.

Moreover, to promote sustainability throughout the value chain, Thaioil has collaborated with external parties, companies and organizations. The key collaborative projects were the Co-loading project and the crude oil transfer to domestic refinery plants through our single buoy mooring. In 2017, these two projects helped to reduce costs by 66 million Baht.

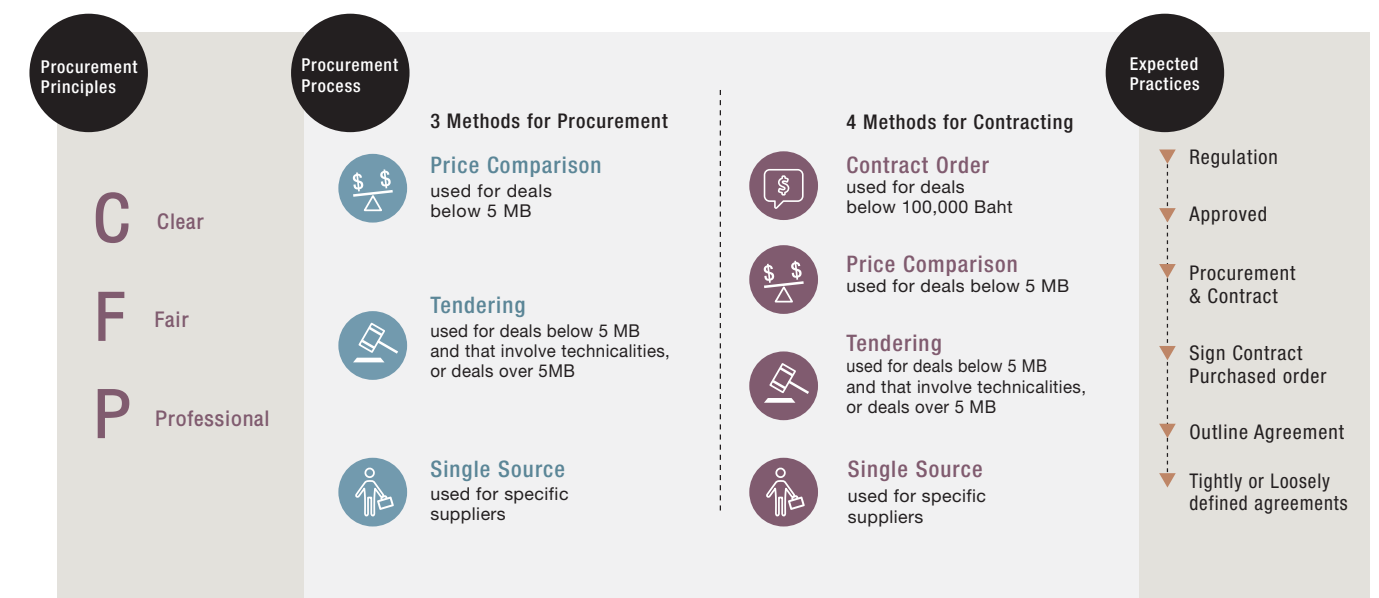
The Ocean Loss Index was defined as a performance indicator to monitor crude oil loss during marine transportation. In 2017, the value of Ocean Loss Index was better than target thanks to our sourcing strategy that focused on sourcing from various regions to reduce fluctuation.

## Performance

### Ocean Loss Index



## Procurement Practices





## Promoting transparency throughout the value chain



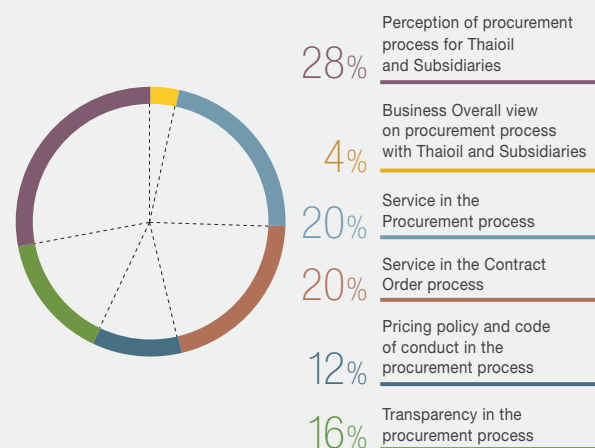
Not only encouraging all critical suppliers to register themselves and acknowledge the 2014 Supplier Code of Conduct on the e-Procurement platform Ariba, Thailoil and Subsidiaries also organize activities to raise awareness and understanding of the Supplier Code of Conduct, such as the campaign to communicating of procurement policies. The organization continues to operate according to the Clear Fair Professional principles, and have invited suppliers and contractors to participate in the PTT Group CG Day with PTT Group. Consistent communications with all suppliers ensure that they are kept up to date with all relevant information and that the procurement process is operated with the utmost transparency.

The e-Auction process supports the commitment to transparency

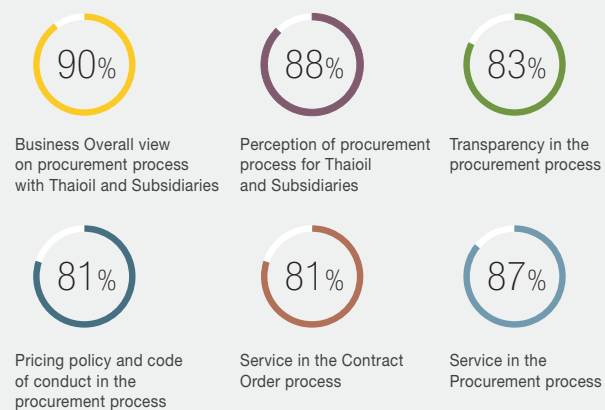


and upholds the principles of fair competition. All suppliers are able to quote unlimited times (Dynamic Pricing) and have equal access to information during the procurement process. Thailoil and Subsidiaries have found that the e-Auction process has become increasingly popular and has been helpful in decreasing time and costs needed to complete the project. To further support good governance practices, Thailoil and Subsidiaries have also invited the qualified critical commodity suppliers to join the Collective Action Coalition against Corruption (CAC). The CAC was established in 2010 by 8 leading Thai private organizations with the support of the government's Office of National Anti-Corruption Commission (NACC). From the supplier survey in 2016, it was found that within the Governance area (out of the ESG areas), suppliers were most interested in an activity involving the NACC.

## Survey Dimension



## Result of Supplier/Contractor Perception Survey 2017



## Cost Management

In 2017, Thailoil and Subsidiaries increased efficiency in operation and cost management by reducing costs, firstly in Capital Expenditures (CAPEX) from projects such as the Tank construction project at Khao Bo Ya, the Jetty 7-8 Expansion Project, and the CFP Feasibility Study Project. Secondly, the cost reduction from Operating Expenses (OPEX) such as developing annual and long-term contracts through procuring from alternative and new sources with strategic sourcing, e-Auction processes, and participating in strategic co-sourcing events with PTT Group. Procurement continues to follow the management approach of Thailoil and Subsidiaries, from supplier analysis to strategizing a procurement plan that is the optimal fit for each product and service. All products are delivered in a timely manner and remain in good conditions that comply with SSHE standards. Overall, Thailoil and Subsidiaries have successfully managed 21 projects with cost reduction by about 238 million Baht.

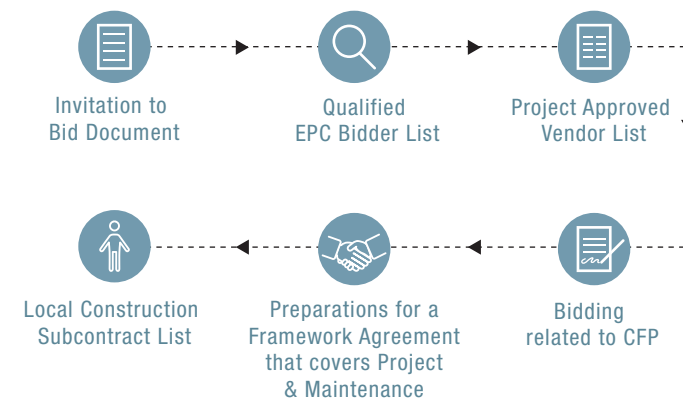
## Risk Management in Supply Chain

To ensure the successful implementation of the business growth plan, Thailoil and Subsidiaries have to improve the risk assessment and management process for more efficiency. This is done through professional bidding competition strategy such that has fair prices complies with regulations, places supplies as business partners, and follows procurement and contract readiness.

Development does not exclusively mean financial growth, but rather an overall improvement in environmental, social, and governance (ESG) factors. Thailoil and Subsidiaries have referred to the approach of the Securities and Exchange Commission of Thailand

(SEC) to develop a project development framework for suppliers. The ESG Plus Verification Program thus materialized as a systemized and formalized framework for assessing ESG risks in suppliers. It is the hope of Thailoil and Subsidiaries that all critical suppliers will be able to demonstrate their capability in ESG risks management and achieve a sustainable development approach that aligns with the practices of Thailoil and Subsidiaries. Not only will this strengthen the collaboration of the Company and suppliers, but this project will also serve to enhance ESG management capability and ensure sustainability in all operations. The process takes four years and targets are active from 2017.

## Procurement and Contract Readiness

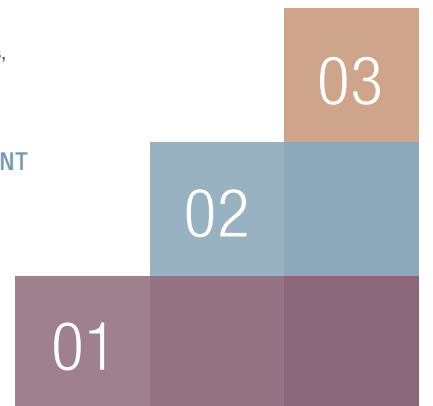


## Execution Plan of ESG Plus Verification Program

**CAPABILITY BUILDING**  
Capability Building for suppliers,  
October 2017 – March 2018

**3RD PARTY ASSESSMENT**  
3rd Party Assessment from  
external parties, January –  
March 2018

**VERIFY**  
Verify from Thailoil and  
Subsidiaries, August –  
September 2017



Besides the ESG Plus Verification, Thailoil and Subsidiaries have continued to manage risks through using a comprehensive supplier selection system. All new suppliers are required to register, acknowledge the Supplier Code of Conduct, and complete an ESG self-assessment on the e-Procurement system. This ESG self-assessment covers both general and specific information of suppliers, and is used to build the supplier profile that is used in the ESG Plus Verification.

Human rights risks in the supply chain are managed through ensuring communications and engagement with suppliers. This includes communications through various channels with suppliers, reviewing terms and conditions to ensure compliance with relevant standards and regulations such as labour rights and regulations, monitoring the ethical practices of suppliers, and applying human rights principles in ESG risk management processes. Human rights management for suppliers also refer to safety and environmental standards, and the Safe-White-Green principles.

## Low-carbon Products and Environmentally Friendly Products

To enable the business to grow sustainably, Thailoil continuously looks for business opportunities to grow and develop environmentally friendly products. The goal is to expand the main business portfolio into environmentally-friendly products. In 2017, Thailoil's strategy focused on increasing the sales of low-carbon fuels, such as gasohol and biodiesel. The ratio of environmental-friendly product sales at 26% of all oil products sales, equivalent to Greenhouse Gas reduction about 600,000 tons of carbon dioxide. At the same time, as domestic demand for fuel oil increased, the Company expanded and improved its lorry loading terminal and increased the capacity of oil, ethanol, and B100 (biodiesel) storage tanks. The expanded terminal increased capacity to distribute oil from 10 to 15 million liters per day. This helped to increase competitiveness and address the need of customers. The renovated terminal also helped to boost customer satisfaction as it provided more convenience.

Moreover, Thai Lube Base Public Company, the Company's lubricant manufacturing subsidiary, had developed environmentally friendly products such as Treated Distillate Aromatic Extract (TDAE), Treated Residue Aromatic Extract (TRAЕ), and Aromatic Solvate (AROS), which are rubber process oil products with low pollution. These products also addressed the current EU regulations on the restrictions of polycyclic aromatics at less than 3%. Thai Lube Base produced 96,272 tons of TDAE in 2017.

## Customer Relations

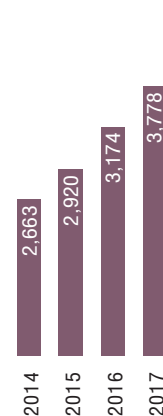
Thailoil commits to become a customer driven organization by providing services that are above expectation. This approach will help to improve customer engagement and drive the Company to become a customer-oriented business partner.

In 2017, Thailoil addressed customer demands and advanced the business through its Lorry Loading Terminal Expansion project. The project increased the terminal's facilities to serve a growing number of vehicles. It also increased the efficiency of the oil distribution process. The process is now shorter. It provides a faster, safer, and more convenient service for customers around the clock. This is in line with the Company's Customer Excellence target. It also demonstrates the Company's commitment to become "the biggest loading terminal in Eastern and Northeastern Thailand". The project was formally launched in August 2017.

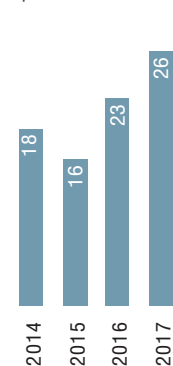
The terminal was expanded by more than 3.2 sq.km. The Terminal Automatic Management was implemented to provide an electronic queue system for vehicles to receive products. This resulted in better traffic control within the terminal. In terms of improvements to lorry loading, the Company had

### Performance

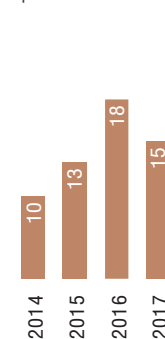
**Sales of low-carbon products (e.g. gasohol, biodiesel)**  
Million liter



**Share of low-carbon product sales (e.g. gasohol, biodiesel) relative to total fuel oil product sales**  
percent baht



**Share of environmentally friendly product (TDAE, TRAЕ and AROS) sales relative to total lubricant sales**  
percent baht



**Remark :** The reporting values of product sales are different from last year because the calculation scope was changed.

increased the number of tank containers, loading stations, loading hoses, and seals. This reduced product receiving time (gate to gate) from 75 minutes to just 50 minutes.

In addition, Thailoil strives to become the best service terminal by impressing customers continuously through its investments in design, modern technology, and high service standard. The terminal provides services to lorry drivers such as the electronic queue check, oil loading amount check and the available hose check. Security system at the terminal was also improved to increase customer confidence in the Company. The terminal also organized "Happy Hour" events that help drivers to relax. The terminal expansion also included more canteens, minimarts, napping areas, toilets, and shower rooms. These services are provided to ensure customers that their drivers will reach their destinations safely. It demonstrated Thailoil's utmost care from the heart.

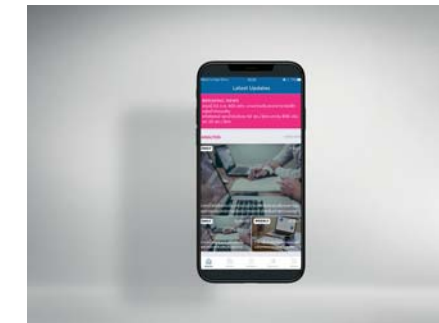
In 2017, Thailoil also used information technologies to improve business processes. This demonstrated its commitment to Service Excellence. These technologies include:



TOP Data Centre Communication (TOP DCC) – the data transmission system is used for ordering products. It allows users to place orders, confirm orders, issue invoices and make payments. The system allows data transmission conveniently, helps to reduce errors from manual record and shortens the processing time.



TOP Tracking Application developed for customers and sale departments of Thailoil and Subsidiaries – the application provides real-time update once receiving the produce to marine vessel. It automatically notifies users the date and time to pick up the products and allows them to make changes to the pick up through the application and via SMS.



TOP Energy Application for customers and other users provides follow up on oil price situation and other news related to oil markets. The application contains analysis on oil prices and allows users to search for petrol stations throughout the country. It also provides information on promotional events.

Apart from these projects, Thailoil is also committed to customer feedback. The Company listens to suggestions from customers on future improvements. This is done through a variety of activities:

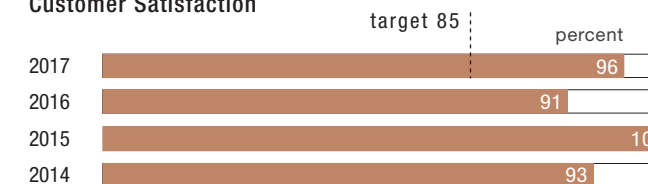
- Monthly and quarterly customer visit to enhance good relationship and to provide market outlook for both domestic and international markets.
- Customer visits to refinery to understand the production and lorry/oil tanker loading processes.
- Relationship-building activities through Sports Day events e.g. badminton, captain's ball, tug of war activities
- Participation in Bangkok Marathon with customers
- Recreational activities for drivers to help them relax.

### Performance

The Company's investment in these projects and activities resulted in Thailoil and Subsidiaries\*\* achieving a customer engagement\* score of 96, which is better than the target score of 85.



#### Customer Satisfaction



Note:

\* In 2017 Thailoil changed its survey focus from tracking customer satisfaction to tracking customer engagement

\*\* The Thailoil and Subsidiaries cover Thailoil Public Company Limited, Thai Lube Base Public Company Limited, Thai Paraxylene Company Limited, and Thailoil Marine Company Limited





# Enriching Value

Thaioil and Subsidiaries commit towards managing environmental performance and increasing energy efficiency to enhance the highest values and create balance and harmony with the environment.



Environmental  
Compliance



Climate Change



Energy



# Environmental Management

## Sustainability Goal

- Support business growth to reach 1<sup>st</sup> quartile in eco-efficiency within the oil and gas industry
- Achieve 100% compliance with all associated regulations
- Aim zero environmental incidents and achieve sustainable development alongside the community

## Current Progress

- Consistently reviewed the 5-year Environmental Master Plan (2017-2021) to strengthen the environmental management approaches
- Established an Environmental Compliance Committee and a Risk Reporting Committee
- Ensured compliance with regulations and environmental standards e.g. ISO14001:2015 and EIA standards
- Studied upcoming expansion projects such as the Clean Fuel Project (CFP) and the Jetty 7-8 Expansion Project through completing EIAs

## Strategies to achieve sustainability goal in 3-5 years

- Implement the 5-year Sustainability Development Master Plan (2018-2022) aligned with the principles of preventing and mitigating environmental impacts which is accounted by security, safety, occupational health and environment-functions.
- Apply Thailoil's Environmental Management System for all new business operations to systematically manage environmental performance

## Commitment and Goal

Thailoil and Subsidiaries continue to manage natural resource consumption and minimize impacts on the community. Besides operating as planned in the 5-year Environmental Master Plan, The Company have also conducted various activities and projects. We commit to maintain 100% compliance with regulations, aim zero environmental complaint, and achieve air quality management (i.e. SOx, NOx) which grater that government standard. These lead to the strengthening of Operational Excellence in environmental management of The Company.

## Compliance on Environmental Laws and Regulations

100%

compliance with environmental laws and regulations

0

case of non-compliance

## Environmental Management

2.6%

of industrial waste in landfills

0

case of significant spills from production and transfer processes

## Sustainable Development Goals (SDGs)



## Challenges and Opportunities

Due to changes in the environment and other external factors, Thailoil and Subsidiaries have to constantly adapt the organization's business operations, including economic, social, technological and environmental aspects, to ensure business continuity. Furthermore, changes in resource availability and new international agreements have meant that environmental regulations are continuously stringent. Expansion projects such as the Clean Fuel Project (CFP) and the Jetty 7-8 Expansion Project are also counted as challenges in adequately handling stakeholder's expectations in social and environmental performance – i.e. health effects on surrounding communities. From the successful realization of the 5-year Environment Master Plan, the Company have continued to manage risks through the risk-based approach, including projects such as decreasing environmental impacts on ambient air and water body, tracking new concerned regulations from government authorities, tracking global environmental trends, studying product life cycles to assess environmental impact, improving environmental performance to be in optimum efficiency, and identifying opportunities to improve and increase resource efficiency.

## Management Approach and Performance

### Environmental Impact Assessment

Thailoil and Subsidiaries believes in creating harmony between industry sector and community. Every Thailoil business activity and new development project had been carried out with utmost social responsibility to protect the environment and the surrounding communities. To ensure that every new development project had thoroughly considered economic, social, and environmental conditions, it is mandatory for every project operated by the Company to be subjected to an Environmental Impact Assessment. This ensured that effective measures can be conducted for environmental effective and impact mitigation. Moreover, public participation during the assessment process is organized at least two times in accordance with guidelines given by the Office of Natural Resources and Environmental Policy and Planning (ONEP). This provides an opportunity for the Company to disclose information on developing projects and communicate preventative and corrective environmental measures to the public. At the same time, it also allows the Company to gain feedback and suggestion to improve the Environmental Impact Assessment. These processes helped assure the public that occupational health, safety and environmental management of the is appropriate, adequate, and effective in managing the potential impacts of the project.

In 2017, Thailoil and Subsidiaries prepared Environmental Impact Assessment reports for two projects, organized two additional public participation forums, and carried out two socio-economic surveys.

### Compliance on Environmental Laws and Regulations

To ensure that employees and concerned persons acknowledge and comply with relevant environmental laws and regulations, Thailoil and Subsidiaries has appointed a Compliance Committee comprising of representatives from related work units to assess compliance on these laws and regulations in their areas of expertise. The new compliance committee ensures that the compliance assessment is complete, accurate, and standardized throughout the organization. In addition, the Company also established the Compliance Unit in 2017 to drive compliance assessment and to develop tools and systems that would facilitate the assessment process. However, the compliance assessment is still currently conducted primarily by Compliance Committee. Compliance Unit coordinates the assessment process to ensure that it is conducted by relevant subject matter experts from each unit. The effectiveness of the compliance assessment is demonstrated through the fact that Thailoil and Subsidiaries incurred no fines or legal consequences from violating environmental laws and regulations in 2017.

## Performance

### Environmental Violations 2014-2017

0 Case

### Environmental Fines 2014-2017

0 Baht



## Air Quality

### Oxides of Nitrogen (NO<sub>x</sub>) and Oxides of Sulphur (SO<sub>x</sub>)

Thaioil and Subsidiaries commit to responsibly managing NO<sub>x</sub> and SO<sub>x</sub> emissions to protect surrounding communities and the environment from adverse impacts. Thus, air quality management measures have been implemented as identified in the Environmental Master Plan, which commits to apply the most efficient technology to control emission. To control NO<sub>x</sub> emitted, Ultra-Low NO<sub>x</sub> burners have been chosen to install for all new projects. All existing furnaces that are compatible have also been replaced with ultra-low NO<sub>x</sub> burners. Through this initiative, the Company has been able to control NO<sub>x</sub> emissions to comply with regulations and environmental performance targets despite business growth.

To control for SO<sub>x</sub> emissions, Thaioil and Subsidiaries have firstly decreased consumption of fuel oil in the refining processes. As of 2017, the proportion of fuel oil to fuel gas has been decreased to 12.5:87.5, which means that SO<sub>x</sub> emissions have decreased by over 3,700 tons. Secondly, the Company has also installed Sulphur Recovery Units (SRUs) to recover pure forms of sulfur from emitted gas. Thirdly, the Company have established a continuous emission monitoring system and yearlong, periodic inspections of air quality from the vent. Finally, to prepare for upcoming regulations on the Euro 5 standards for the oil and gas sector to be announced by the Pollution Control Department, desulfurization units have been installed in the production processes for controlling sulfur content under 10 ppm. As of the past year, amount of SO<sub>x</sub> emission are less than regulations required.

### Volatile Organic Compounds (VOCs)

Thaioil and Subsidiaries monitor emissions of VOCs through using a Photo Ionization Detector (PID) to determine gas leaks throughout the production process. This complies with international standards and regulations. Additionally, the Company continue to improve monitoring processes to appropriate with the production processes in any operation changed, and has developed VOCs reductions measures that comply with US EPA since 2011.

Not only controlling of production process, bio-filters has been applied for reduce VOCs from production units and wastewater treatment process. The Vapor Recovery Units (VRUs) has been installed at product loading station. These VRUs have a 99% efficiency in cutting VOCs emitted from product loading.

For future projects, the Company have studied environmental impacts resulting from VOCs and assess current mitigation measures through the environmental impact assessment (EIA) process. In addition, additional measures to prevent and reduce emissions of VOCs, such as using an enclosed wastewater treatment system to decrease odor, have been studied and designed equipment and technologies to control VOCs in expansion projects. One research project has also been initiated under the Environmental Master Plan to further understand the spreading of VOCs from containers of raw materials and oil products. This project will be done in partnership with an educational institution, and the results will be used to improve environmental management.

## Industrial Waste Management

### Waste

The Waste Management Committee oversees the development and execution of waste management policies and procedures throughout the value chain. Thaioil and Subsidiaries continue to frame the waste management approach on the 3Rs – Reduce, Reuse, and Recycle. Over the past year, onsite visits to all subcontractors employed for industrial waste management have also been conducted.

Waste management vendors are assessed for compliance with the Supplier Code of Conduct covering their performance in environmental, social, and governance (ESG) factors. Additionally, the Waste Management Procedure have been reviewed and revised to enhance effectiveness of concerned functions. There are also other projects done in collaboration with PTT Group. These projects include studies of waste exchange, industrial waste value enhancement, and enhancing value for e-waste – which are normally disposed in landfills – by recycling for use in other industries. This particular project of improving efficiency in handling e-waste has helped Thaioil and Subsidiaries achieve the goal of 5% waste to landfill, which is also a step to achieve the zero waste to landfill goal for 2020. This has also helped decrease greenhouse gas emissions scope 3 from methane emitted from landfill.

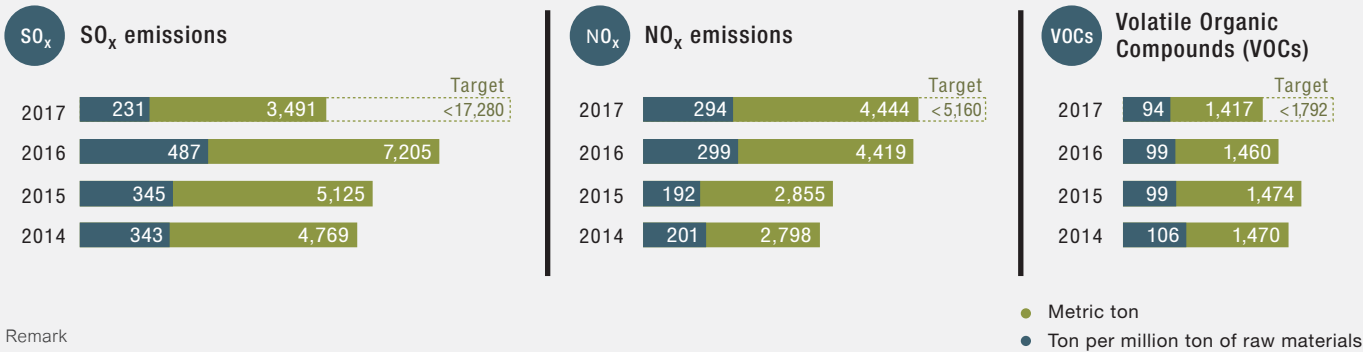
Lastly, the Company have developed an environmental database for waste management to organize and analyze data to design an even more efficient management system. Over the past year, scope of the project has been reviewed and expected to be launched by 2018.

### Wastewater

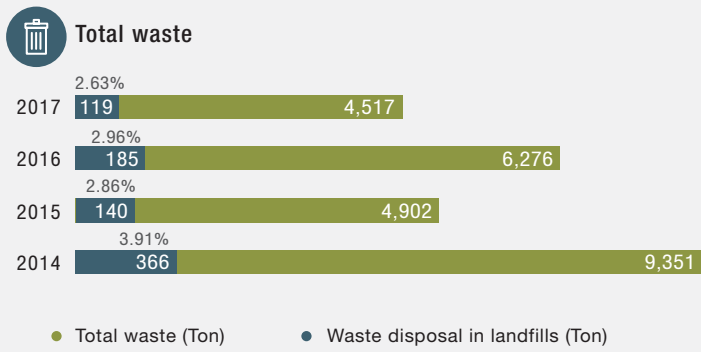
Thaioil and Subsidiaries continue to control and inspect wastewater management to ensure that quality of water discharged from the wastewater treatment system is better than regulatory standards. The Company has also developed the staff competency and technology through various initiatives such as training sessions for wastewater management staff, studies of microorganisms to select active of discharge water species for biological wastewater treatment, and 24-hour monitoring of Chemical Oxygen Demand (COD) of discharged water which directly reported to the Department of Industrial Works. In 2017, 18.73 million cubic meters of the treated water with 179 Tons of COD Loading was discharged to the sea.

Furthermore, the bio-filter project was developed to enhance efficiency of hydrocarbon treatment unit by preventing and reducing of hydrocarbon emitted to the atmosphere. Based on the success of the bio-filter, more research is currently being conduct on the applicability of the enclosed wastewater system and other environmental measures for future expansion projects – one being the use of enzymatic technology to decrease sludge concentration in wastewater.

## Performance



Remark  
\* 2017 data covers emissions from LABIX Company Limited and TOP SPP Company Limited.  
\*\* Estimate from refinery throughput taken into only Thai Oil PCL. Labix Company Limited, operated since 2016, is the product development base on the existing business without any importing intake from outside.



Oil and Chemical Spills Prevention

Preventing oil and chemical spills is one of the main priorities of Thailoil and Subsidiaries. As a result of this commitment, there has been no significant oil or chemical spill over the past 10 years, or since 2005. The management approach has assigned as the following 3 main areas:

1. Prevention

1.1 Aim to use only shipping vessels that meet safety standards according to the PTT Group Ship Vetting System by having captains of Thailoil and Subsidiaries and PTT Group review and cross-check ship's safety documents to ensure that each ship meets the safety standards for oil transport.

1.2 Routine maintenance of ports, buoys, and equipment used for oil transfer such as oil pipelines, safety joints and ship ropes, with closely supervised by the organization's engineers.

1.3 Regularly conduct tanker safety audits based on random selection of both domestic and foreign ships at the Company's ports. Any detected defects or problems will be notified to the ship captain and manager for further correction and prevention under the monitoring of the Port Division. However, if a severe defect is found, a moratorium will be placed on the ship in question until the issues get resolved. Documents on the resolution must be submitted to the Port Division for approval before the moratorium can be lifted

1.4 Reward recognition for tanker safety. Thailoil and Subsidiaries has a recognition program to promote safety and pollution-free work practices by selecting and rewarding the top 5 ships with the highest frequency at the company's port with no accidents and a good audit record. This reward, given at the end of the year, provides additional encouragement for ship's crews at the company's ports to work with interest, attention, and enthusiasm.

2. Mitigation

In 2016, Thailoil and Subsidiaries organized an oil and chemical spill prevention training with The Science Faculty of the Royal

Thai Navy Institute. The training was highly accepted and satisfied with the lessons learnt from the Navy. Thus, in 2017, a drilling of water pollution prevention and recovery plan in the case of oil and chemical spills was continued. Through this drill, employees of all levels in the emergency plan have to face a scenario that was very challenging and quite improbable – i.e. a benzene spill occurring at the same time as a fire in the CBM mooring buoy area. As for petroleum spills, the table top and field exercises have been included, such as a scenario of a paraxylene spill at the pier occurring at the same time as a fire incident on the pier, the boat, and on the sea. From the aforementioned drills, a pre-incident plan for oil and petrochemical marine spills occurring at the same time as fire incidents was developed. This pre-incident plan is integrated in the organization's emergency plan, and is uploaded on the Intranet for all accessibility.

3. Personnel Development

Thailoil and Subsidiaries prioritize personnel development as key to ensuring successful removal of oil residue and petrochemical products in the case of oil and petrochemical spills. In 2017, training sessions, and seminars in Thailand and abroad for employees were conducted as the follows.

3.1 Oil spill response 2017 at Sirikit Convention Center, 21-22 September 2017

3.2 Regional Industry Technical Advisory Group (RITAG) Seminar at Singapore, 24-25 October 2017

3.3 Oil and Chemical Spill Table Top and Field Exercise, which consists of drilling for a situation with high challenge and severity to practice as expressed in the Item 2. Mitigation.

3.4 Emergency drills in the case of oil spills with external parties, including PTT Group Sriracha Oil Terminal and Esso (Thailand) Company Limited, 5 July 2017

Thailoil and Subsidiaries have planned training sessions for 2018 as follows.

1. Chemical spill management training by international experts for emergency team members

2. Emergency drills in the case of oil spills with external parties, including PTT Group Sriracha Oil Terminal and Esso (Thailand) Company Limited

3. Preventing accident and off-shore incident of construction of the connecting Jetty 7-8 with existing pier and the operation of existing pier, including:

- 1) A workshop with concerned functions to assess risks and existing mitigation measures for the first piling
- 2) A meeting with stakeholders such as the PTT Pier Sriracha, ESSO Pier, employees, and managers who managed marine transportation of petroleum to inform the construction project and the mitigation measures such as:

2.1) Communicate to the Hydrographic Department of the Royal Navy to make a public announcement about the pier construction and warn all vessels – both Thai and foreign – to avoid transportation in the construction area and transport with caution in surrounding areas;

2.2) Place seven buoys around the construction area, and ensure that the buoys are highly visible – i.e. yellow buoys will be highly visible during the day, and visible light up during the night;

2.3) For areas with posted piled without beams and concrete bases, a red emergency lights should be added to the top of the pole to warn sailors and speedboats, and prevent them from crashing. The communications team will communicate and ensure the acknowledgement and understanding of the community, fishermen, and local entrepreneurs;

2.4) Collaborate with subcontractors in completing the Job Safety Analysis (JSA) in posting the poles and constructing near the piers to ensure the utmost safety in construction and surrounding areas.



*“We are taking environmental care of all water, waste, and atmosphere for the most impact mitigation for community. If environment and community couldn't stand, Thailoil would not be too.”*

**Apisak Kaekapthong**  
Environmental Strategic Planning Specialist



# Climate Change and Energy Efficiency

## Sustainability Goal

- **Set Energy Intensity Index (EII) as corporate KPI at 84.2 by 2018**
- **Optimize water consumption and reduce Greenhouse Gas emissions throughout product life cycles**

## Current Progress

Achieved 83.2 of EII at Thailoil refinery, Thailoil Power, and TOP SPP, better than 84.1 of target 2017

Integrated implement all aspects of Business Continuity Plan, develop a product life cycle assessment and environmental inventory, and collaborated with PTT Group to manage raw water shortage risks

## Strategies to achieve sustainability goal within 3-5 years

- Plan to improve the overall energy efficiency by continuously conducting studies and implementing various projects.
- Strengthen water management plan for business expansion, including building a relationship between the industrial group and the government to advance policies and water management

## Commitment

Thailoil and Subsidiaries recognizes its obligation to manage energy efficiently in order to reduce energy consumption and greenhouse gas emissions. The company aims to not only reduce its environmental impact through business activities but also to cope with climate change. Thailoil has invested continuously in a variety of projects including energy efficiency management, oil loss reduction during transportation and production, water management to prevent water shortage caused by climate change, and the selection of technology and conducting R&D to create environmentally-friendly products and clean energy.

## Reduced energy consumption in 2017

383,009 gigajoules  
or  
21,487 tons

of CO<sub>2</sub> equivalent from 15 energy efficiency improvement and oil loss reduction projects

26 million Baht  
investment in energy efficiency improvement and oil loss reduction projects

103 million Baht per year  
cost saving from energy efficiency improvement and oil loss reduction projects

## Thailand Energy Awards 2017

Outstanding Team Performance in the Energy Efficiency Award from the Ministry of Energy and participated in the Low Emission Support Scheme (LESS) promoted by the Thailand Greenhouse Gas Management Organization (Public Organization)

## Sustainable Development Goals (SDGs)



## Challenges and Opportunities

Energy is the primary cost of the oil refining industry. Thailoil places utmost importance on managing energy efficiency and sets target on energy efficiency as one of corporate KPI. This decision does not just benefit Thailoil economically, but also helps to reduce environmental impacts significantly.

In addition, to prepare the Company for expanding refinery business under the Clean Fuel Project (CFP), Thailoil will build more production units to increase crude oil distillation capacity and to increase the ratio of high market value products by using energy efficient technologies. The Company expects that after this project commissioning, the overall energy efficiency of the refinery would significantly improved.

These expansion projects will result in significant increases in water demand. Although Eastern Thailand has never had water shortage problems, this business growth and climate change may effect on global water supply mean that Thailoil and Subsidiaries are facing new challenges and opportunities in properly planning business growth and corresponding water use. Thus, measures to control environmental impact, especially focusing on water management measures that equitably distribute the benefits and costs between stakeholders, have been designed. Additionally, the water management has been integrated into the business continuity plan. An environmental impact assessment was done to determine appropriate mitigation measures. Desalination Units have been established to constantly be ready to support in the case of water shortage. Finally, the 3Rs to decrease dependence on natural water sources and mitigate potential conflicts that may occur from future water consumption have continuously conducted.

## Management Approach and Performance

### Energy Efficiency Improvement

In 2017, the refinery facilities implemented 15 energy saving projects which helped reduce energy consumption by 383,009 gigajoules or 21,487 tons of CO<sub>2</sub> equivalent per year.

Some significant projects implemented in 2017 were:

- Installation of a highly efficient plate heat exchanger in the crude oil heater for Crude Distillation Unit 1
- Improvement of furnace efficiency of the production units
- Project to increase the frequency of heat exchanger cleaning

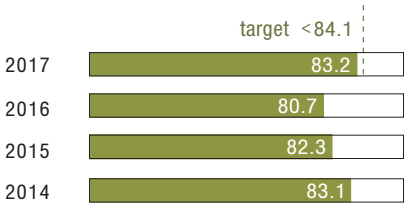
for Crude Distillation Units 1 and 2 to save energy use of crude oil furnace

- Cleaning the heat exchanger with High Vacuum Unit 2 (HVV-2) to separate waxy products from long residue, thus increasing energy efficiency in the refinery
- Improvement of the production process for Sulfur Production Unit to achieve energy saving
- Reduce heat loss in oil transfer process

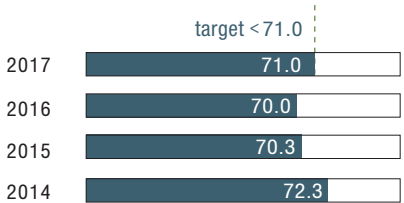
## Performance



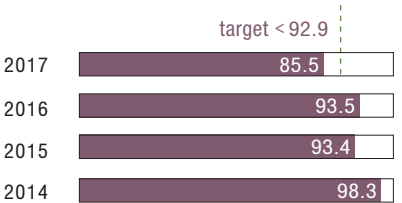
### Energy Intensity Index (EII)\*



### Energy Intensity Index of TPX



### Energy Intensity Index of TLB



Note: \*Covers Thailoil Public Company Limited (TOP), Thailoil Power Company Limited (TP), and TOP SPP Company Limited

Climate Change Mitigation Action

Direct Greenhouse Gas Emission Reductions (Scope 1)

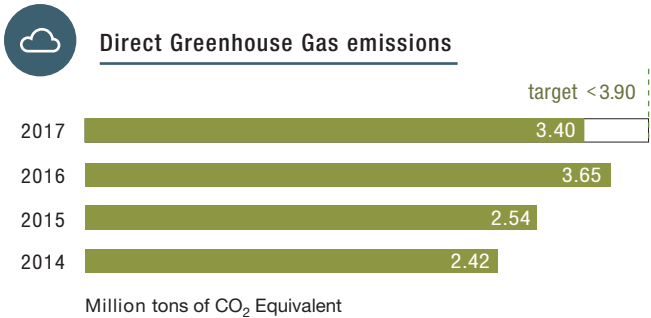
The impact of climate change that can affect Thailoil deals with the regulatory risk on environmental performance. To ensure uninterrupted compliance, Thailoil and Subsidiaries have consistently monitored, studied, and analyzed regulatory developments, such as the UNFCCC COP21, both national and global level. Thailoil and Subsidiaries have also participated in initiatives to decrease greenhouse gas emissions. One of these initiatives was a collaboration with the Petroleum Institute of Thailand (PTIT) and the National Metal and Materials Technology Center (MTEC) to conduct a life cycle assessment and develop the Thai National Life Cycle Inventory Database for the oil refinery industry. This project was successfully completed in June 2017, and have given the Company a Life Cycle Inventory (LCI) tool to use in managing and planning for GHG reduction initiatives.

Furthermore, Thailoil and Subsidiaries have also collaborated

with the PTT Research and Technology Institute to apply the inventory analysis to the carbon footprint database. The output of this project was then used to conduct an impact assessment to plan for GHG reductions throughout the product life cycle. Currently, the carbon footprint, energy consumption, and resource use of Thailoil's refinery units were determined. In the future, this assessment is planned to be applied to all Subsidiaries to further assess impacts and determine measures to efficiently reduce environmental impact through the value chain.

The Company continue to support initiatives that increase energy efficiency and reduce greenhouse gas emissions through CSR projects e.g. renewable energy projects and waste management projects include Maejo Hydroenergy Project, and biogas from rubber sheet production and household wastes at Mak Noi Island, Phang Nga Island.

Performance



Indirect Greenhouse Gas Emissions Reductions (Scopes 2 and 3)

Thailoil and Subsidiaries have no indirect greenhouse gas emissions (Scope 2) that came from external consumption of electric and steam power, as the facility at Sriracha district, Chonburi province does not depend on external energy sources.

As for other forms of indirect greenhouse gas emissions (Scope 3), the Energy & Loss Committee (E&L Committee) is the main driver to monitor and manage processes to reduce GHG emissions from indirect sources as reducing crude oil losses during transport from oil production plant to refinery (i.e. ocean loss) to decrease GHG emissions from the upstream processes. Then, for the transport process, developing a network of pipelines is used to decrease dependence on other vehicles such as lorry and ships in product distribution. Lastly, for waste management, GHGs from landfill disposal is controlled in accordance with the Waste Management Policy driven by Waste Management Committee, and the organization-wide target of zero waste to landfills by 2020. Other initiatives to reduce indirect GHG emissions include reducing employees' individual GHG emissions from transportation. The company support employees with a carpooling option, shared vans, and employee service vans that complies with the rental contract standards for rented vehicles. Employees are also encouraged to conduct meetings through video calls and use bicycles in the production plant.

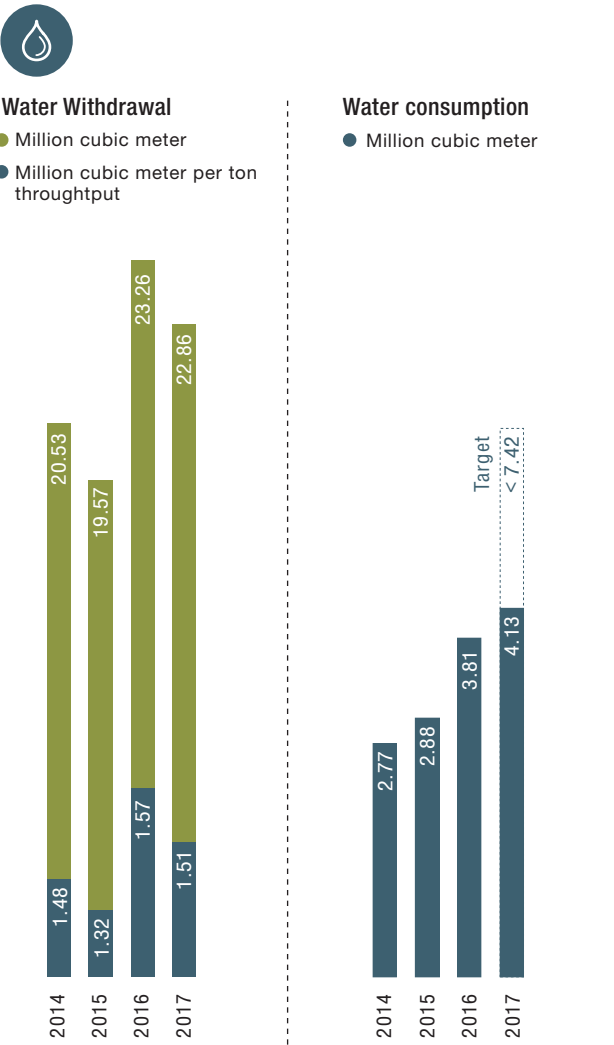
Water Management

To ensure that water management practices are sustainable and that risks in creating adverse impacts towards operations and associated stakeholders are mitigated, Thailoil and Subsidiaries have developed a water management plan that distributes benefits equitably between all stakeholder groups. Plans and projects to support the business and surrounding communities in the case of water shortage have also been developed . Examples include a developed water management plan that follows with the integrated business continuity plan, 6 installed desalination units that are ready to support operations with immediate notice, newly built water reservoirs, and construction of pipes for withdrawing water from Nong Ko Reservoir at Chonburi province and Nong Pla Lai Reservoir at Rayong province. This pipe construction is done in collaboration with a water distribution company to support expansion projects such as the Clean Fuel Project (CFP) and to prepare for potential water shortage scenarios.

The 3Rs have been applied to water management practices in order to decrease dependence on natural water sources. Some of the associated initiatives include increasing cooling water circulation to recycle more water, decreasing wastewater discharge into water sources, replacing old water pipes with new ones to decrease leakage, campaigning to reduce the volume of water consumption and raise awareness on the importance of efficiently using water, increasing water efficiency in the production process through decreasing steam loss with better steam traps, and further studying environmental impacts of water shortage.

Thus, in 2017, the Company achieved in decreasing the volume of water withdrawn from natural sources through the aforementioned projects. Moreover, by shifting toward desalination in production process, 2.2 million cubic meters of water distilled from desalination units, which represented a 32% share of total water consumed in the production processes.

Performance





# Performance Summary

## I : STRENGHTENING VALUE

Economic Performance	Unit	2014	2015	2016	2017
Economic Value Generated <sup>(1)</sup>					
Sale revenue	Million THB	390,090	293,569	274,739	337,388
Economic Value Distributed <sup>(1)</sup>					
Operating cost <sup>(2)</sup>	Million THB	394,170	273,819	247,261	305,386
EBITDA	Million THB	2,651	25,492	32,675	36,925
Net profit / [Loss]	Million THB	[4,140]	12,181	21,222	24,856
Earnings / [Loss] per share	THB/ Share	[2.03]	5.97	10.40	12.18
Total assets	Million THB	193,607	192,166	217,731	228,108
Total equity	Million THB	87,844	97,009	111,597	127,148
Return on equity	%	[4.7]	13.9	21.3	21.7
Return on assets <sup>(1)</sup>	%	[1.9]	6.5	10.5	11.4
Market capitalization	Million THB	102,817	109,141	136,070	211,143
Employee wages and benefits	Million THB	2,882	2,924	3,299	3,468
Payment to providers of capital <sup>(3)</sup>	Million THB	8,060	6,583	10,259	12,720

Remarks:  
(1) Scope of reporting Economic performance is in line with annual financial report 2017  
(2) Operating costs are the expenses which are related to the operation of a business, or to the operation of a device, component, and piece of equipment or facility.  
(3) Payment to providers of capital includes dividend and interest.

Contributions to External Organizations and Associations	Type of Organizations	Unit	2014	2015	2016	2017
Oil Industry Environmental Safety Group Association (IESG)	Trade Association	THB	1,416,000	1,302,000	1,477,000	1,740,000
Oil Spill Response Limited (OSRL)	Trade Association	THB	2,206,306	2,398,375	2,370,574	1,973,293
Petroleum Institute of Thailand (PTIT)	Tax-Exempt Organizations	THB	673,709	642,828	684,201	710,993
Thailand Business Council for Sustainable Development (TBCSD)	Trade Association	THB	250,000	250,000	250,000	250,000
The Federation of Thai Industries (FTI)	Trade Association	THB	42,800	42,800	121,980	209,760
Inspectioneering	Tax-Exempt Organizations	THB	18,870	37,740	18,870	37,740
International Council on Large Electric Systems (CIGRE)	Trade Association	THB	23,298	19,598	18,743	20,348
The Association of Private Power Producers (APPP)	Trade Association	THB	42,800	42,800	82,033	85,600

Occupational Health and Safety Performance <sup>(1), (2)</sup>	Unit	2014		2015 <sup>(3)</sup>		2016		2017	
		Male	Female	Male	Female	Male	Female	Male	Female
Total hour worked	Hour	2,181,655		2,351,909		1,945,471		2,214,031	
• employees		2,064,168		287,741		1,684,378		1,882,245	
Total hour worked	Hour	10,283,128		5,192,527		5,629,968		3,772,751	
• contractors		4,215,943		976,584		4,677,579		3,043,649	

Occupational Health and Safety Performance <sup>(1), (2)</sup>	Unit	2014		2015 <sup>(3)</sup>		2016		2017	
		Male	Female	Male	Female	Male	Female	Male	Female
Injuries									
Near miss <sup>(6)</sup> • employees and contractors	Case	3,670	3,237		3,697		3,138		
Absentee rate (AR) • employees	% of total day scheduled to be worked	0.76	0.50	2.25	0.75	2.26	0.55	1.26	
Total recordable injuries case (TRIC) • employees <sup>(4)</sup>	Case	1	1		1		0		
			1	0	1	0	0	0	
Total recordable injuries case (TRIC) • contractors <sup>(4)</sup>	Case	4	3		3		1		
			3	0	3	0	1	0	
Total recordable injuries rate (TRIR) • employees <sup>(4)</sup>	Case / Million hour worked	0.46	0.43		0.51		0		
			0.48	0	0.59	0	0	0	
Total recordable injuries rate (TRIR) • contractors <sup>(4)</sup>	Case / Million hour worked	0.39	0.58		0.53		0.27		
			0.71	0	0.64	0	0.33	0	
Lost workday case (LWC) • employees	Case	0	0		0		0		
			0	0	0	0	0	0	
Lost workday case (LWC) • contractors	Case	1	1		1		1		
			1	0	1	0	1	0	
Lost workday rate (LWR) • employees	Day / Million hour worked	0	0		0		0		
			0	0	0	0	0	0	
Lost workday rate (LWR) • contractors	Day / Million hour worked	5.83	20.41		1.24		0.53		
			25.14	0	1.50	0	0.66	0	
Lost time injury frequency rate (LTIFR) • employees	Case / Million hour worked	0	0		0		0		
			0	0	0	0	0	0	
Lost time injury frequency rate (LTIFR) • contractors	Case / Million hour worked	0.10	0.19		0.18		0.27		
			0.24	0	0.21	0	0.33	0	
Illnesses									
Occupational illness frequency rate (OIFR) • employees	Case / Million hour worked	0	0		0		0		
			0	0	0	0	0	0	
Occupational illness frequency rate (OIFR) • contractors	Case / Million hour worked	0	0		0		0		
			0	0	0	0	0	0	
Fatality									
employees	Case	0	0		0		0		
			0	0	0	0	0	0	
contractors	Case	0	0		0		0		
			0	0	0	0	0	0	
Process Safety <sup>(5)</sup>									
Number of Tier 1 process safety events	Case	1	0		0		3		
Number of Tier 2 process safety events	Case	0	2		1		1		

NA: Not Available  
(1) Thaioil and Subsidiaries follow standard statistical reporting of PTT Group in accordance with Occupational Safety and Health Administration (OSHA)  
(2) Occupational safety and health reports are broken down to employees and contractors in order to illustrate social responsibility of Thaioil and Subsidiaries to operational contractors.  
(3) Data based on gender have been collected since 2015.  
(4) TRIC and TRIR data does not include accidents categorized at the first-aid level.  
(5) Thaioil and Subsidiaries reported process safety in accordance with API RP 754 standard.  
(6) Thaioil and Subsidiaries report 'Potential Incident Report (PIR)' in combination with Near Misses

People	Unit	2014		2015		2016		2017	
		Male	Female	Male	Female	Male	Female	Male	Female
Employees <sup>(1)</sup>									
Total number of employees	Person	1,357		1,409		1,434		1,447	
		1,008	349	1,041	368	1,056	378	1,059	388
Number of employees by level									
Permanent contract									
• Executives <sup>(3)</sup>	Person	5	0	8	1	12	2	8	1
• Management <sup>(4)</sup>	Person	93	49	94	51	94	51	91	50
• Non-management	Person	910	300	939	316	950	325	958	334
Temporary contract <sup>(6), (7)</sup>									
• Executives <sup>(3)</sup>	Person	N/A	N/A	N/A	N/A	0	1	2	1
• Management <sup>(4)</sup>	Person	N/A	N/A	N/A	N/A	0	1	0	1
• Non-management	Person	N/A	N/A	N/A	N/A	0	1	0	1
Number of employees by age group <sup>(1)</sup>									
• Below 30 years old	Person	228	112	273	134	252	100	246	93
• 30-50 years old	Person	543	190	542	192	529	222	522	238
• Over 50 years old	Person	238	46	226	42	275	56	291	57
Number of Employee by area <sup>(7)</sup>									
Permanent contract									
• Depot	Person	N/A	N/A	N/A	N/A	2	1	2	1
• Bangkok	Person	N/A	N/A	N/A	N/A	46	128	49	131
• Sriracha (Refinery)	Person	N/A	N/A	N/A	N/A	1,008	249	1,006	253
Temporary contract <sup>(6)</sup>									
• Depot	Person	N/A	N/A	N/A	N/A	N/A	N/A	0	0
• Bangkok	Person	N/A	N/A	N/A	N/A	N/A	N/A	0	3
• Sriracha (Refinery)	Person	N/A	N/A	N/A	N/A	N/A	N/A	2	0
New employees hired <sup>(1)</sup>									
Total number of new hire employees	Person	136		100		66		55	
		94	42	66	34	40	26	32	23
• Below 30 years old	Person	75	28	59	26	34	17	27	17
• 30-50 years old	Person	19	14	7	8	6	9	5	6
• Over 50 years old	Person	0	0	0	0	0	0	0	0
Total new hire rate	% of total employee	10.02		7.10		4.60		3.80	
		9.33	12.03	6.34	9.24	3.79	6.88	3.02	5.93
Employee turnover <sup>(1), (5)</sup>									
Total turnover	Person	62		51		45		47	
		41	21	36	15	26	19	33	14
• Below 30 years old	Person	10	14	14	4	11	7	9	4
• 30-50 years old	Person	16	7	8	6	5	12	3	5
• Over 50 years old	Person	15	0	14	5	10	0	21	5
Turnover rate	% of total employee	4.57		3.62		3.14		3.25	
		4.07	6.02	3.46	4.08	2.46	5.03	3.12	3.61
Voluntary resignation	Person	48		33		34		23	
		27	21	22	11	15	19	14	9
Employee Engagement	%	82		81		84		89	

People	Unit	2014		2015		2016		2017	
		Male	Female	Male	Female	Male	Female	Male	Female
Parental leave									
• Employee taken parental leave	Person	22		20		16		40	
		18	4	14	6	12	4	24	16
• Employee returned to work after parental leave	Person	22		20		16		40	
		18	4	14	6	12	4	24	16
Average training hours <sup>(1), (2)</sup>									
Total training hours	Hours	107,440		122,081		85,893		71,644	
Average training hours for all employees	Hour / Person / Year	80	78	90.6	75.5	57	68	49	50
• Executives <sup>(3)</sup>	Hour / Person / Year	34	0	415	324	102	145	42	269
• Management <sup>(4)</sup>	Hour / Person / Year	85	76	151	90	68	84	46	71
• Non-management	Hour / Person / Year	80	78	82	72	55	66	50	45
Individual Development Plan									
Employees who developed Individual Development Plan (IDP)	%	100		100		89		97	
Grievance									
Number of grievances about labor practices	Case	11		1		3		0	
• Resolved grievance	Case	11		1		2		1	
• Under investigation	Case	0		0		1		0	
Number of grievances about human rights	Case	NA		0		0		0	
Union Labor									
Total employees covered by collective bargaining agreement <sup>(6)</sup>	Person	627		590		552		519	

Remarks  
NA: not available  
(1) Consolidated data of employees assigned from external organizations, both permanent contract and temporary contract  
(2) The data excluded paid education leave funded by Thaioil-supported scholarships  
(3) Executives include CEO, president, executive vice president, and assistant executive vice president  
(4) Management includes vice president, division manager, and section manager  
(5) Turnover rate includes employees with voluntary resignation and employees with normal retirement.  
(6) Temporary-contract employee refers to full-time employees as Thaioil does not have part-time employment  
(7) Data has been collected since 2016  
(8) Scope of reporting includes only Thaioil Public Company Limited.

WE : SHARING VALUE

Social and community development	Unit	2014	2015	2016	2017
Total investment for social and community development	Million THB	26.4 <sup>(1)</sup>	73.4	87	30.4 <sup>(1)</sup>

Remarks: (1) In 2014 and 2017, most of CSR projects were under study phase.

Value chain management	Unit	2014	2015	2016	2017
New suppliers that were screened using criteria for social and environmental aspect <sup>(1)</sup>	%	67.39	100	100	100
Customer engagement <sup>(2)</sup>	%	93	100	91	96 <sup>(3)</sup>
Number of grievance about social and environmental aspect from suppliers and contractors	Case	0	0	0	0
Number of grievance about customer data leakage / loss	Case	0	0	0	0

Remarks :  
(1) Only non-hydrocarbon suppliers that were assessed.  
(2) Scope included Thaioil, Thai Lube Base, Thai Paraxylene and Thaioil Marine  
(3) From 2017 onwards, the Customer satisfaction score has been changed to Customer engagement score



WORLD : ENRICHING VALUE

Environment Performance	Unit	2014	2015	2016	2017
Refinery throughput <sup>(1)</sup>	Metric ton	13,905,501	14,870,915	14,781,364	15,121,269
Energy investment	Million THB	2,243	23	43	26
Energy Management and Greenhouse Gas <sup>(2), (4)</sup>					
Total energy consumption <sup>(2)</sup>	Million GJ	18.11	17.62	27.39	29.41
Refinery energy intensity	GJ / ton throughput	1.30	1.19	1.85	1.95
Total fuel consumption <sup>(2)</sup>	Million GJ	39.47	41.39	59.95	57.33
Primary fuel consumption intensity	GJ / ton throughput	2.81	2.78	4.06	3.79
• Natural gas	Million GJ	19.17	18.69	31.60	35.11
• Fuel oil	Million GJ	4.61	5.40	6.33	2.53
• Fuel gas	Million GJ	14.52	16.47	21.19	18.72
• Coke	Million GJ	0.84	0.82	0.82	0.97
• LPG	Million GJ	Less than 0.01	Less than 0.01	Less than 0.01	Less than 0.01
• Diesel	Million GJ	0.02	0.01	0.01	น้อยกว่า 0.01
• Gasoline	Million GJ	Less than 0.01	Less than 0.01	Less than 0.01	Less than 0.01
• Ethanol	Million GJ	Less than 0.01	Less than 0.01	Less than 0.01	Less than 0.01
Electricity consumption	Mega Watt	845,374	967,063	987,728	1,026,841
Electricity purchased	Mega Watt	0	0	0	0
Electricity sold <sup>(4)</sup>	Mega Watt	294,363	294,526	1,171,414	1,583,839
Reductions in energy consumption	Million GJ	692,686	477,741	470,699	383,009
Total amount invested in renewable energy	Million THB	1,452	1,380	1,298	1,212
Direct Greenhouse Gas Emission (scope 1) <sup>(3)</sup>	Million ton CO <sub>2</sub> equivalent	2.42	2.54	3.65	3.40
Direct Greenhouse Gas Emission (scope 2) <sup>(3)</sup>	Million ton CO <sub>2</sub> equivalent	0	0	0	0
Direct Greenhouse Gas Emission (scope 3) <sup>(3)</sup>					
• Customers: consumption of finished oil products	Million ton CO <sub>2</sub> equivalent	NA	NA	20.4	19.9
Greenhouse gas intensity (scope 1 and 2)	Ton / Ton throughput	0.17	0.17	0.25	0.22
Greenhouse Gas Emission Reduction (scope1)	Million ton CO <sub>2</sub> equivalent	73,000	26,827	26,406	21,487
Emission <sup>(5), (6)</sup>					
• Nitrogen oxide (NO <sub>x</sub> ) emission	Thousand Tons NO <sub>x</sub>	2.80	2.85	4.42	4.44
• Sulfur oxide (SO <sub>x</sub> ) emission	Thousand Tons NO <sub>x</sub>	4.77	5.13	7.21	3.49
• Volatile organic compound (VOC) emission	Thousand Tons VOCs	1.47	1.47	1.46	1.42

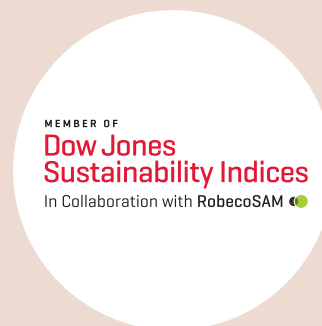
Environment Performance	Unit	2014	2015	2016	2017
Water <sup>(7)</sup>					
Total water withdrawal <sup>(8)</sup>	Million m <sup>3</sup>	20.53	19.57	23.26	22.86
• Industrial water consumption	Million m <sup>3</sup>	2.77	2.88	3.81	4.13
	m <sup>3</sup> per ton throughput	0.20	0.19	0.26	0.27
• Seawater consumption <sup>(8)</sup>	Million m <sup>3</sup>	16.84	16.00	19.17	18.23
Total water discharge volume <sup>(8)</sup>	Million m <sup>3</sup>	17.76	16.69	19.45	18.73
	m <sup>3</sup> per ton throughput	1.28	1.12	1.32	1.24
Biochemical Oxygen Demand (BOD)	Ton	30.85	28.27	12.29	20.45
Chemical Oxygen Demand (COD)	Ton	192.86	137.65	129.66	179.01
Total oil and grease	Ton	3.93	2.25	2.91	2.73
Total suspended solids	Ton	28.58	24.00	22.10	29.88
Waste Disposal by Type					
Total hazardous waste disposal	Ton	6,708	4,902	5,922	4,276
• Landfills	Ton	56	21	24	18
• Recycle	Ton	2,225	1,661	884	1,031
• Recovery	Ton	3,491	2,764	4,685	3,134
• Others <sup>(9)</sup>	Ton	936	202	329	92
Total non-hazardous waste disposal	Ton	1,933	254	354	238
• Landfills	Ton	117	119	161	100
• Recycle	Ton	1,130	78	95	82
• Recovery	Ton	448	46	47	39
• Others <sup>(9)</sup>	Ton	238	11	51	20
Total non-routine waste disposal	Ton	710	0	0	0
• Recovery (including energy recovery)	Ton	517	0	0	0
• Landfills	Ton	193	0	0	0
Oil and Chemical Spill <sup>(10)</sup>					
• Significant oil and chemical spill-land	Case	0	0	0	0
• Significant oil and chemical spill-marine	Case	0	0	0	0
Legal Compliance					
• Fines for non-compliance with environmental laws	Million THB	0	0	0	0
• Number of violations of legal obligations/regulations	Case	0	0	0	0

Remarks  
NA: not available  
(1) Refinery Throughput includes crude oil and other feedstock.  
(2) Total energy consumption covers TOP, TPX, TLB LABIX, TP and TOPSP. The amount of fuel, steam, and electricity was accounted as per GRI Standard (302-1). All energy conversion factors were specific value form Thaioil and Subsidiaries' laboratory.  
(3) Thaioil and Subsidiaries follow standard statistical reporting of PTT Group in accordance with WBCSD GHG Protocol. The greenhouse gases include CO2, CH4, and N2O.  
(4) There was no steam sold to outside the organization.  
(5) Thaioil and Subsidiaries follow Health, Safety, and Environmental Performance Monitoring and Report developed by Shell International Practice Standard.  
(6) Thaioil and Subsidiaries do not purchase ozone depleting substances including CFCs, HCFCs, halons, and methyl bromide.  
(7) Data exclude portable water consumption which has very small volume compared to water consumption in production process.  
(8) Both water withdrawal and discharge included the rejected water of desalination unit.  
(9) Other waste disposal covers incineration and external wastewater treatment services.  
(10) Oil and chemical spill greater than 1 Barrel is considered significant.

## Awards and Recognitions



RobecoSAM Sustainability Award 2017  
in Gold Class level for 4 consecutive years



Energy Industry Group leader  
from Dow Jones Sustainability Indices  
for 4 consecutive years



CSR-DIW Continuous Award 2017  
and certificate for 10 consecutive years



Outstanding in teamwork on  
energy management  
from the Ministry of Energy



Honorable frame recognizing  
'Sufficiency Economy' philosophy  
applied in the organization  
from the National Economic and Social  
Development Board and Research and  
Development Institute of Sufficiency  
Economy Philosophy Foundation



Best Investor Relations Awards 2016  
from the Stock Exchange of Thailand



BEST class of Sustainability Awards 2016  
and Thailand Sustainability Investment  
from the Stock Exchange of Thailand



Excellence in sustainable development/  
social responsibility in THAILAND  
CORPORATE EXCELLENCE AWARDS 2016



The Strongest Commitment to Sustainable  
Energy in Southeast Asia and other 3 national  
recognitions i.e.  
- Most Organised Investor Relations,  
- Most Consistent Dividend Policy,  
- Best Strategic Corporate Social Responsibility  
from Alpha Award 2017



Honorable certificate  
on Greenhouse Gas reduction  
activities 2017



ESG 100 Certificate 2017  
from Thaipat Institutes  
for 3 consecutive years



Asia's Best CEO and Best Investor  
Relations by Company  
from Asian Excellence Awards 2017



Recertificated being member of Collective  
Action Coalition Against Corruption: CAC



Honorable mention award in Human  
resource management and Governance  
in Drive Award Human Resource 2017



Honor class of Sustainability Awards 2017  
and Thailand Sustainability Investment  
THIS from the Stock Exchange of Thailand



Honorable mention award on  
transparency organization  
in "NACC Integrity Awards 2017



BEST class of Sustainability  
Report Awards 2017  
from CSR Club, Thai Listed Companies  
Association, the Securities and Exchange  
Commission Thailand and Thaipat institute



## LRQA Independent Assurance Statement

### Relating to Thai Oil Public Company Limited's Environmental and Social Disclosures within the Sustainability Report for the calendar year 2017

This Assurance Statement has been prepared for Thai Oil Public Company Limited in accordance with our contract but is intended for the readers of this Report.

#### Terms of engagement

Lloyd's Register Quality Assurance Ltd. (LRQA) was commissioned by Thai Oil Public Company Limited (TOP) to provide independent assurance on the environmental and social disclosures within its Sustainability Report 2017 ("the Report") against the assurance criteria below to a limited level of assurance and at the materiality of the professional judgement using "LRQA's verification procedure". LRQA's verification procedure is based on current best practise and uses the principles of AA1000AS (2008) - inclusivity, materiality, responsiveness and reliability of performance data and processes defined in ISAE3000.

Our assurance engagement covered TOP's operations and activities in Chonburi, Thailand, including six subsidiary companies and specifically the following requirements:

- Reviewing whether the selected environmental and social disclosures within the Report have taken account of:
  - GRI Sustainability Reporting Standards, and
  - GRI G4's Oil and Gas Sector Disclosures
- Evaluating the reliability of data and information for the selected environmental and social disclosures listed below: <sup>1</sup>:
  - Environmental: GRI disclosure 302-1, 303-1, 305-1, 305-2, 305-7, 306-1, 306-2, 306-3
  - Social: GRI disclosure 403-2

Note: For safety performance data (disclosure 403-2), it covered TOP's operation activities in Bangkok, Thailand.

Our assurance engagement excluded TOP's operations and activities outside Chonburi, Thailand, any project expansion within Chonburi, Thailand and the data and information of its suppliers, contractors and any third-parties mentioned in the Report.

LRQA's responsibility is only to TOP. LRQA disclaims any liability or responsibility to others as explained in the end footnote. TOP's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the Report and for maintaining effective internal controls over the systems from which the Report is derived. Ultimately, the Report has been approved by, and remains the responsibility of TOP.

#### LRQA's Opinion

Based on LRQA's approach nothing has come to our attention that would cause us to believe that TOP has not:

- Met the requirements above
- Disclosed reliable performance data and information for the selected environmental and social disclosures as no errors or omissions were detected
- Covered all the issues that are important to the stakeholders and readers of this Report.

The opinion expressed is formed on the basis of a limited level of assurance and at the materiality of the professional judgement of the verifier.

**Note:** The extent of evidence-gathering for a limited assurance engagement is less than for a reasonable assurance engagement. Limited assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

#### LRQA's approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing TOP's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through reviewing documents and associated records.
- Reviewing TOP's process for identifying and determining material issues to confirm that the right issues were included in their Report. We did this by benchmarking reports written by TOP and its peers to ensure that sector specific issues were included for

comparability. We also tested the filters used in determining material issues to evaluate whether TOP makes informed business decisions that may create opportunities that contribute towards sustainable development.

- Auditing TOP's data management systems to confirm that there were no significant errors, omissions or mis-statements in the Report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the Report.
- Interviewing TOP's management representative to understand and obtain data and information with respect of high level strategic management approach.

#### Observations

Further observations and findings, made during the assurance engagement, are:

- **Stakeholder inclusivity:**  
We are not aware of any key stakeholder groups that have been excluded from TOP's stakeholder engagement process. TOP has continued in understanding of the importance to have a report on subsidiary companies and any projects expansion whose material issues have impact on them. We believe the future report should take into account to report these associated activities affecting sustainability performance.
- **Materiality:**  
We are not aware of any material issues concerning TOP's sustainability performance that have been excluded from the Report. TOP has reaffirmed their existing processes for identifying and evaluating their material issues which are determined by a set of risk evaluation criteria. However we believe that the process and set of criteria should be reviewed in the future report to be aligned with local and global context, for example Climate Change.
- **Responsiveness:**  
TOP has processes in place to communicate and respond to stakeholders, we are not aware of any concern from their stakeholders and we believe that future reports should disclose progress and outcome of associated projects in GHG reduction in accordance with desired plan.
- **Reliability:**  
TOP has implemented a centralised data management system on environment and safety performance and considered to be well established for the Report and this system has been implemented across the facilities.

#### LRQA's standards, competence and independence

LRQA implements and maintains a comprehensive management system that meets accreditation requirements for ISO 14065 *Greenhouse gases – Requirements for greenhouse gas validation and verification bodies for use in accreditation or other forms of recognition* and ISO/IEC 17021-1 *Conformity assessment – Requirements for bodies providing audit and certification of management systems* that are at least as demanding as the requirements of the International Standard on Quality Control and comply with the *Code of Ethics for Professional Accountants* issued by the International Ethics Standards Board for Accountants.

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent.

The verification is the only work undertaken by LRQA for TOP and as such does not compromise our independence or impartiality.

Signed

Dated: 12 February 2018



Nit Tanasuthiseri,  
LRQA Lead Verifier  
On behalf of Lloyd's Register Quality Assurance  
Lloyd's Register International (Thailand) Limited  
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LRQA reference: BGK00000099

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<sup>1</sup> GHG quantification is subject to inherent uncertainty.

# GRI Content Index & UNGC Principles COP & SDGs

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102-20	<a href="https://www.thaioilgroup.com/home/content.aspx?id=151">https://www.thaioilgroup.com/home/content.aspx?id=151</a>		
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## GENERAL DISCLOSURES

GRI Standard	Page or Website	Omission	External Assurance
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102-35	Annual report (Remuneration)		
102-36	Annual report (Remuneration)		
102-37	Annual report (Remuneration)		
Stakeholder Engagement			
102-40	18		
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Reporting Practice			
102-45	1		
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102-47	16-17		
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102-49	17		
102-50	1		
102-51	1		
102-52	1		
102-53	1		
102-54	1		
102-55	78-82		
102-56	76-77		



TOPIC SPECIFIC DISCLOSURES				
Material Aspects	Indicators	Page or Website	Comments/ Omissions	External Assurance
Economic Performance	201-1 OGSD	68		
	202-2 OGSD	66-67		
Indirect Economic Impact	203-1 OGSD	10-11, 43, 59		
	203-2 OGSD	42-49		
Anti-corruption	205-1	22-25		
	205-2	24-25		
	205-3	25		
Energy	302-1	72	To avoid double counting, Thaioil does not report energy consumption/sold of electricity, heating, cooling, and steam, since all were self-generated from primary fuel. Only electricity was sold out to external.	yes
	302-3 OGSD	65, 72		
	302-4	64-65		
	302-5	54		
Water	303-1 OGSD	67	The standard, methodologies and consumptions used to calculate water withdrawal are not reported.	yes
	303-2 OGSD	67		
Emissions	305-1 OGSD	66, 72		yes
	305-2 OGSD	66, 72		yes
	305-3 OGSD	66, 72		
	305-4 OGSD	66, 72		
	305-5 OGSD	64, 72		
	305-6	73		
	305-7 OGSD	60, 72		yes
Effluents and Waste	306-1	61.73		yes
	306-2 OGSD	61.73		yes
	306-3 OGSD	62-63, 73		yes
Environmental Compliance	307-1	59,73		
Supplier Environmental Assessment	308-1	50, 53, 71		
	308-2	61-63		
Employment	401-1	70		
	401-2	31, 70-71		
	401-3	71		
Labor/Management Relations	402-1	35		
Occupational Health and Safety	403-2 OGSD	38, 39, 69		yes
	403-3	39		


TOPIC SPECIFIC DISCLOSURES				
Material Aspects	Indicators	Page or Website	Comments/ Omissions	External Assurance
Training and Education	404-1	71		
	404-2	32		
	404-3	32,71		
Diversity and Equal Opportunity	405-1	70-71		
Human Rights Assessment	412-1	33-35		
Local communities	413-1	42-49		
	413-2 OGSD	42-49		
Supplier Social Assessment	414-1	50, 53		
	414-2	38, 39		
Asset Integrity and Process Safety	G4-OG13	37		
Customer Privacy	418-1	71		

United Nations Global Compact Principles		
Principles		Page
Human Rights	<b>Principle 1</b> : Businesses should support and respect the protection of internationally proclaimed human rights	33-35
	<b>Principle 2</b> : Businesses should make sure that they are not complicit in human rights abuses	33-35
Labor	<b>Principle 3</b> : Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining	35
	<b>Principle 4</b> : The elimination of all forms of forced and compulsory labour	33-35
	<b>Principle 5</b> : The effective abolition of child labour	33-35
	<b>Principle 6</b> : The elimination of discrimination in respect of employment and occupation	33-35
Environment	<b>Principle 7</b> : Businesses should support a precautionary approach to environmental challenges	58-67
	<b>Principle 8</b> : Undertake initiatives to promote greater environmental responsibility	58-67
	<b>Principle 9</b> : Encourage the development and diffusion of environmentally friendly technologies	58-67
Anti-corruption	<b>Principle 10</b> : Businesses should work against corruption in all its forms, including extortion and bribery	22-25




Sustainable Development Goals: SDGs

ThaiOil analyze, prioritize, and integrate sustainability development goals with corporate activities in reference to ‘Mapping the Oil and Gas Industry to the Sustainable Development Goals: An Atlas’ published by UNDP, IFC, IPIECA, and the Columbia Center on Sustainable Investment (CCSI), according to the following steps:




Identify SDGs that are the most relevant to the Company's activities and the impacts

>










Establish relationship with stakeholders and prioritize for Improvement

>



Collaborate with stakeholders for development, and create understanding in the Company's roles regarding SDGs support

SDGs	Examples of Thailoil and Subsidiaries' activities and projects in alignment with SDGs	Reporting details
	<ul style="list-style-type: none"><li>• The Clean Fuel Project (CFP)</li><li>• The Jetty 7/8 Project</li><li>• Additional Crude Oil Storage Tanks Project</li><li>• Human capital development through GREAT and DANCE project to respond to 4.0 Industrial revolution</li><li>• Creating jobs and income for local communities and society</li></ul>	<ul style="list-style-type: none"><li>• Value chain management, page 50-55</li><li>• Human resource, page 30-33</li><li>• Corporate Responsibility to society and community, page 42-49</li><li>• Innovation management, page 26-29</li></ul>
	<ul style="list-style-type: none"><li>• Waste management with 3Rs strategy, focuses on reduction, reuse and recycling</li><li>• Waste management by committed to achieve zero landfills</li></ul>	<ul style="list-style-type: none"><li>• Increased operational eco-efficiency, page 58-63</li><li>• Environmental management, page 58-63</li></ul>
	<ul style="list-style-type: none"><li>• Innovation development plan; product innovation, process innovation, and the culture of innovation</li></ul>	<ul style="list-style-type: none"><li>• Innovation management, page 26-29</li></ul>
	<ul style="list-style-type: none"><li>• Operating Clear Fair Professional (CFP)</li><li>• Operating in accordance to comprehensive human rights due diligence process throughout the entire value chain</li></ul>	<ul style="list-style-type: none"><li>• Anti-corruption, page 22-25</li><li>• Human rights, page 33-35</li></ul>
	<ul style="list-style-type: none"><li>• Energy Efficiency Improvement Project</li><li>• Developing Alternative Energy for Security and Conservation of Natural Resources in the rural areas of Ban Jor Leu Neu, Mae Sod sub-district, Sob Meoy District, Mae Hong Sorn</li><li>• Solar Cell Project, “Solar PV Rooftop” by Sakchaisit Co. Ltd, one of the subsidiaries, which serves as the second pilot project in Map Ta Phut industry estate</li></ul>	<ul style="list-style-type: none"><li>• Energy Efficiency, page 64-65</li><li>• Corporate Responsibility to society and community, page 42-49</li></ul>
	<ul style="list-style-type: none"><li>• The study of GHG reduction initiatives</li><li>• Water Crisis Management</li></ul>	<ul style="list-style-type: none"><li>• Climate change, page 65-66</li><li>• Water Related Risks, page 67</li></ul>
	<ul style="list-style-type: none"><li>• Safe White Green Project</li><li>• Establishing a supporting center for CFP Project</li><li>• Health and Learning Center for communities of Thailoil and Subsidiaries</li><li>• Community Development Project to enhance the quality of life of residents and other citizens</li><li>• Health Program with employees</li></ul>	<ul style="list-style-type: none"><li>• Occupational health and safety, page 36-39</li><li>• Corporate Responsibility to society and communities, page 42-49</li><li>• Human resource, page 30-33</li></ul>

Survey of Reader's Opinion

Your views and suggestions towards the Corporate Sustainability Report 2017 will be incorporated to improve our business performances and future reporting. Thailoil appreciates your valuable feedbacks

Please mark X in the box ☐ and provide your views in the space provided.

1

Please specify your relationship with Thailoil.

☐ Investor/ Shareholder

☐ Customer

☐ Employee

☐ Communities around Thailoil's operation

☐ Supplier

☐ Government

☐ Academy

☐ Student

☐ Media

☐ Others (please specify.....)

2

How did you receive the report?

☐ Annual General Meeting

☐ Seminar/ Lecture/ Exhibition

☐ Thailoil's employees

☐ Thailoil's website

☐ Others (please specify.....)

3

What is the reason for your interest in Thailoil's Sustainability Report?

☐ To gain information about Thailoil

☐ To obtain investment information

☐ To prepare your own Sustainability Report

☐ In purpose of research and education

☐ Others (please specify.....)

4

Please rate your satisfaction of the presentation of Sustainability Report.

• Language

☐ High

☐ Medium

☐ Low

☐ Improvement

• Supporting graphics, graphs and tables

☐ High

☐ Medium

☐ Low

☐ Improvement

• Report design

☐ High

☐ Medium

☐ Low

☐ Improvement

• Overall satisfaction with the report

☐ High

☐ Medium

☐ Low

☐ Improvement

5

Please rate your interest of each chapter.

• Strategy and business model

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Materiality Assessment and Stakeholders

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Corporate Governance

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Innovation management

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Our Employees

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Occupational Health and Safety

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Our Society and Communities

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Value Chain Management

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Environmental Management

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Climate Change and Energy Efficiency

☐ High

☐ Medium

☐ Low

☐ Uninterested

• Performance Summary

☐ High

☐ Medium

☐ Low

☐ Uninterested

6

Please rate your satisfaction in the completeness and reliability of information in the Sustainability Report.

• Understanding of Thailoil's material aspects

☐ High

☐ Medium

☐ Low

☐ Improvement

• Relevance of performance results to Thailoil's sustainability strategy

☐ High

☐ Medium

☐ Low

☐ Improvement

• Completeness and reliability of contents

☐ High

☐ Medium

☐ Low

☐ Improvement

• Content in line with your expectations

☐ High

☐ Medium

☐ Low

☐ Improvement

7

Does this report include all Thailoil's sustainability material topics?

☐ Yes, it does.

☐ No, it does not.

If not, please specify which topics should be added to the future Sustainability Report.

8

Please provide other comments and suggestions for the improvement of the Sustainability Report.

cut here





Please mail this survey to :

**Innovation and Sustainability Management Function**

**Thai Oil Public Company Limited**

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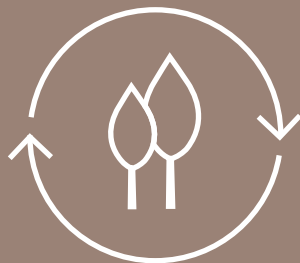
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